

FLYING



We Fly: Cessna Citation CJ4 Gen2

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Cover
Photographer Glenn Watson shoots the latest Cessna Citation CJ4 Gen2 from Textron Aviation in Texas skies.

Publications Mail Agreement No. 40612608
(Canadian Registration Number 126018209RT0001)
Return undeliverable Canadian addresses to:
IMEX Global solutions, P.O. Box 25542, London, ON N6C 6B2

Flying (0015-4806) (USPS 504-930), December 2021, Volume 148, Issue 9. Flying is published eight times a year (March, April/May, June/July, August, September, October, November and December) Bonnier Corporation, 480 N. Orlando Avenue, Suite 236, Winter Park, FL 32789. Periodicals postage paid at Winter Park, FL, and additional mailing offices. Authorized periodicals postage by the Post Office Department, Ottawa, Canada, and for payment in cash. POSTMASTER: Send address changes to Flying, P.O. Box 6364, Harlan, IA 51593-1864; flyingmag.com/cs; 515-237-3697 or 800-678-0797. If the postal service alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within one year.

FLYING

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Subscriptions: Go to flyingmag.com/cs or call 515-237-3697 if you have a subscription question, or write to *Flying*, P.O. Box 6364, Harlan, IA 51593. Subscription Rates: USA addresses - one year for \$20.00, Canadian addresses - one year for \$31.00, and all other international addresses - one year for \$46.00. Cash orders only, payable in US currency.



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View from Above

Letter from the Editor



No Constant but Change

From NBAA 2021 to these pages, we're flying forward.

In two years, so much has changed—and tried its best to change us.

I celebrated two years at the helm of this magazine in October, and those 24-plus months have proved the axiom: There is no constant but change.

In November 2019, the National Business Aviation Association gathered its constituents together—members, exhibitors, sponsors and industry guests—for an upbeat, jet-fueled congregation on the Las Vegas oasis. Blending turbine-powered airplanes, helicopters, avionics and a few piston platforms, there was only the merest inkling of what was to take center stage when the show returned in 2021.

Advanced air mobility. Sustainability. Alternatively powered aircraft. An S-curve leap for the business-aviation sector.

This fall, the hall at the Las Vegas Convention Center—filled with companies from across the spectrum—vibrated with the joy of finally meeting again in person. Though overall attendance felt moderate, the business-to-business engagement was high—perhaps what was needed as we fly fast toward this inflection point. Perhaps we're already there.

The NBAA led other aviation organizations and OEMs in pledging additional sustainability goals, but what

does that mean? Is a 2 percent gain in fuel efficiency each year meaningful? I believe it is. If I could knock down my calorie intake by 2 percent each year, it would offset the decreasing efficiency in my metabolism.

We saw a host of new jets on display at the NBAA's Business Aviation Conference and Exhibition—including the Citation CJ4 Gen2 we cover in "We Fly: Leader of the Pack" this month, by editor-at-large Pia Bergqvist. At the other end of the spectrum, Jason McDowell walks us through the Maule family of approachable aircraft—not only those that have been flying for years but also the new ones still made in Moultrie, Georgia.

Instructor Amy Laboda offers a new perspective on how we look for traffic in the modern era with the incorporation of ADS-B into our collective scans, in "Inside Out or Outside In?" Make no mistake—the technology has affected us in a big way.

At *Flying*, we're about to launch our own evolution into the future. With a new website—and I mean completely new—and an expanded team of journalists, we're soaring upward in the quality and quantity of coverage you'll see across the topics you find meaningful. We'll keep a sharp focus on general and business aviation—specifically on the pilots who fly for their own ends or as a career. We're

also growing new verticals within our purview, including a channel, Modern Flying, with journalists dedicated to space, urban air mobility, vertical-takeoff-and-landing aircraft, military aviation, and alternative sources of power.

These *Flying* pages will change as well, with an updated format to ensure that reading them is a true pleasure for those of us—me included—who love curling up with a magazine, thumbing through pages, and having a tactile, visual and cognitively engaging experience. We'll do more long-form storytelling, while retaining the voices you have loved for so many years. We'll introduce fresh faces as well.

More so than that, we're improving the physical look and feel of the magazine, taking in all of the feedback you've given to our team, and considering what our readers look for in an in-depth—yet contemporary—experience.

It's a lot of change to navigate, but as an industry, aviation has always excelled when driven forward to innovate its way into better solutions. We feel the same way about *Flying*.

Julie Boatman
Editor-in-Chief

@julieinthesty on Twitter

● **Julie Boatman** is a flight instructor and airline-transport-certificated pilot with type ratings in the Cessna Citation Mustang and Douglas DC-3—but she finds true happiness flying low and slow.

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Inbox

December 2021

Charlie

I just finished Dan Pimentel's story about Geraldine "Jerrie" Mock and 38 Charlie ["In Depth: Charlie," November], and am thrilled that this story is finally seeing the light of day.

Dan and I crossed paths roughly 10 years ago when I was the director of operations for an aircraft-management company in Statesville, North Carolina. At the time we met, I'd just returned from a trip to Washington, D.C., where I had spent several days strolling the vast complex of the Udvar-Hazy Center of the National Air and Space Museum. While there, I had stumbled across 38 Charlie and the untold story of its historic flight. I had not yet located a copy of the original printing of the book, and somehow during Dan's and my conversation, [he] was kind enough to loan me his personal copy to read and shared one of his screenplays for me to read.

The story of 38 Charlie and Jerrie Mock is probably one of the most undiscovered and fascinating stories of aviation history, and it is still a mystery to me as to why this story hasn't been widely told. Thank you for allowing Dan to bring light to their story, and may it be an inspiration to a new generation of aviators.

Wayne Lindros
via email

Another Perspective

For many years, I have enjoyed reading [Martha Lunken's] articles in *Flying*, finding them relevant, interesting and accurate about so many aspects of GA flying. For reasons much too complex to explain, I abandoned my pursuit of an airman's certificate in 1971, just before my first solo; and for the same reasons, [I] became committed to a career of preventing loss of life in aviation accidents, culminating in my appointment to be a member of the National Transportation Safety Board in 2003. Again for reasons far too complex to explain, I left the NTSB in August 2005 after one case involving the FAA with a few similarities to [Lunken's]—notably, a small mistake that did not involve a serious safety risk where the FAA chose to impose an extremely harsh penalty to "make an example" for others to see. When I read about [Lunken's] "transgression" back in 2020, this case came to mind right away.

[Lunken's] mea culpa about the irresistible urge to safely fly beneath the Jeremiah Morrow Bridge was profound, complete and acceptable in my view. [She] has acknowledged every important aspect of [the] "violation," but the FAA wanted to demonstrate its power to "take down" a well-known aviation writer by imposing a penalty that certainly did not fit the "crime." Yes, there should have been some penalty, but in

this case, the FAA's excessive use of its authority should be obvious to all. [The August] article "A Little Too Unusual" demonstrates remarkable grace as [Lunken] starts all over again. As an accomplished pilot with more than six decades of experience, being forced by the FAA to apply for a student pilot certificate is an egregious abuse of power.

Richard F. Healing
via email

SkyCourier Background

Thank you, Pia [Bergqvist], for your fine article, ["SkyCourier Visits Oshkosh," October]. In September 2001, while I was a Caravan sales administrator, my boss, John Doman—then-director of Caravan sales—asked me to prepare a "white paper" on Caravan freight operations in the US to gain a better understanding of current operational practices and gain a grasp of what operators would change or improve in the Caravan. I personally visited four Caravan operators, including FedEx in Memphis, [Tennessee,] and contacted an additional five operators by phone. I learned at that time that FedEx was talking with OEMs here and abroad about the next express package freighter that would carry four SSA containers. John Doman's instincts 20 years ago were correct. I was told that FedEx was planning to make a decision on a new aircraft in spring 2002. Some things take longer.

Mike Moore
via email

Seven

I want to send my wish of peace in the midst of sadness to Ben Younger on his loss of Seven. To date, [November's "Dogs Love Trucks"] is his best work in my opinion. There isn't much else to say when you lose your best travel partner and friend. I wish [Younger] happiness and fulfillment on life's journey.

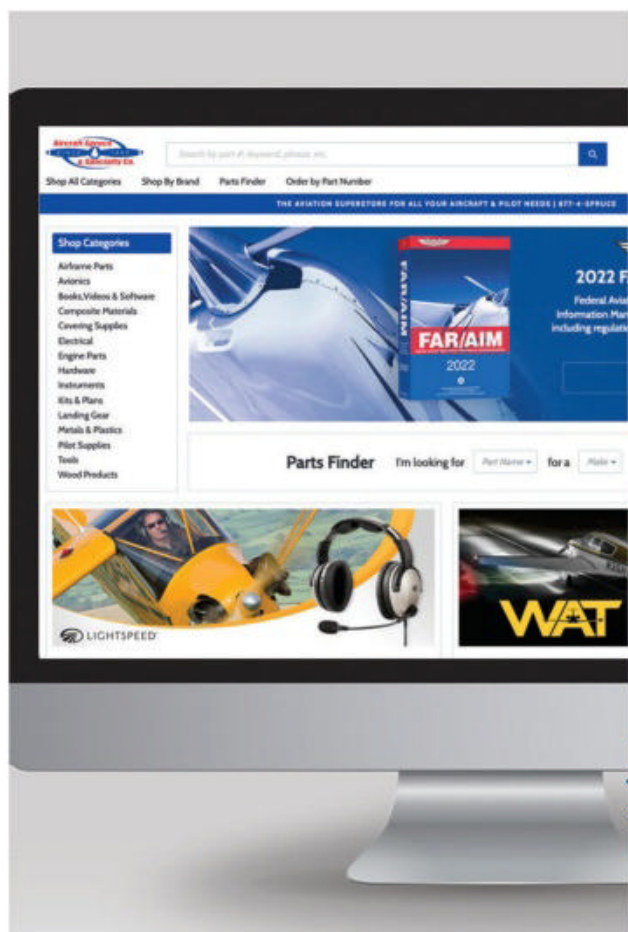
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Holiday Gear Guide

What pilots really want—besides more flight time

BY FLYING STAFF



1 SENSORCON AV8 INSPECTOR

Carbon monoxide poisoning remains an ongoing concern anytime we fly—whether it's from a piston-powered airplane or turbine-engine exhaust. The portable carbon monoxide monitor produced by Sensorcon, the AV8 Inspector, comes in two models to keep close tabs on the CO levels in the cockpit and within enclosed spaces on the ground.

The AV8 CO-01 is a rugged water- and shock-resistant unit that fits into the palm of your hand for easy transport between aircraft. A digital display gives the collective CO reading, and visual and aural alarms warn you of unsafe levels. The CO-03 Pro version adds a vibrating alarm, alarm adjustment, and a time-weighted average feature that reports the average of three readings over a 24-hour period. Both come with a two-year warranty. The CO-01 retails for \$139 and the CO-03 for \$169.

2 METHOD SEVEN SKY/FLT GLASSES

Want a fast update to your view? We tried on the latest sunglasses from Method Seven's SKY and FLT series while at the Reno Air Races in Nevada—a challenging environment, given the high winds and blazing desert sun the event is noted for. The company touts its proprietary “notch-filtering” technology to cut down on glare and “reduce visual noise” while pumping up the important elements of contrast and color.

The eyewear come in a variety of styles, including an Aviatrix FLT model (\$230) specifically styled for women and the Ascent Aviator SKY (\$240). The frames are produced from titanium alloy, and a series of 13 coatings on the lenses cut ultraviolet wavelengths—and the nonpolarized glare reduction doesn't distort tablet or electronic flight displays. The company can also craft lenses to fit your prescription, whether bifocal, single-vision or progressive.



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Gear



3 MOUNTS FOR IPAD/IPHONE

Whether you fly with an app open on your device or you just pull it out from time to time to take pictures or video, we're all flying with a smartphone or tablet. Your first decision: Do you want a portable mount that moves with you between aircraft, or do you prefer a more permanent installation that is aircraft-specific?

Some pilots prefer a minimalist approach and use a hook-and-eye-secured strap around the leg with rubberized clamps or a pivoting, leather-covered base—such as the ASA iPad rotating kneeboard, at \$49.95. The RAM series of mounts runs the gamut between more portable solutions, such as the suction-cup mount for the iPad (starting at \$52.95 at Sporty's Pilot Shop), which attaches to a windscreen, and the claw mount (starting at \$66.95 at Sporty's), which attaches to a yoke's shaft or an exposed tube in the aircraft structure.

Want to go top-of-the-line with a more permanent installation? Take a look at MyGoFlight's iPad-mounting systems, which use machined metal construction and a means of mounting the tablet that ensures all the controls are accessible. Retail prices start at \$124 for the iPad case with elastic strap.



4 FLYING EYES OPHTHALMIC SERIES

The latest from Flying Eyes gives you the opportunity to customize your lenses for use both in flight and in other active endeavors requiring a headset or helmet. The company launched its ophthalmic eyeglass frames in October, featuring its patented 1-millimeter-thin temples and magnetic clip-on sunglass lenses as an option.

Flying Eyes created the line in response to a call from customers for higher-strength lenses they could use in the cockpit—the new line allows for the use of stronger prescription levels than those found before—and on cloudy days when sunglasses aren't a good option. The frames are created from a Resilamide polymer blend. The clip-on sunglasses aren't polarized, so displays show clearly. The four lines (Luzon, Otus, Athene and Noctua) start at \$579 retail.



5 FLIGHT OUTFITTERS FLIGHT SOCKS

We've wear-tested the latest in pilot gear from Flight Outfitters—its line of aviation-themed socks—and we are tough on our clothing. So, the crew-length pairs needed to stand up to hard use, including a few days on the dust-laden Nevada playa at the High Sierra Fly-In in October. No residual dirt remained after a washing—which is saying something.

The Bush Pilot socks feature a Cub (you figure out which one), the Mountain socks speak to a love of the backcountry, the Seaplane socks are for those who splash in, and the Prop socks pay homage to the state of Alaska—and props. A single pair goes for \$9.99, while the bundle of four is \$34.95.



Gulfstream Reveals G400, G800

The product lineup gains large-cabin and ultralong-range mounts.

BY JULIE BOATMAN

Perhaps it was a foregone conclusion that Gulfstream would fill in the blanks numerically in its lineup, from the large-cabin, midsize G280 to the nearly certificated ultralong-range G700. *Flying* was invited to a sneak preview of the new models in September at Gulfstream's headquarters in Savannah, Georgia.

The G400

The first of the two jets added to the roll-up, the G400, takes position between the G280 and the G500 and G600. "It's a sweet spot in the customer base," Gulfstream's president Mark Burns said, with strong demand for an aircraft with a large, stand-up cabin that can cover 4,000 nm and cost about \$35 million. In fact, the G400 is projected to range up to 4,200 nm at Mach 0.85 and 3,950 nm at Mach 0.88.

Gulfstream will start building the first airplane in the beginning of 2022, with the predicted entry into service in 2025. "It was a three-airplane program" from the beginning, Burns said of the G400/G500/G600 line. The G400 will use Pratt & Whitney PW800-series engines; the 812's fan diameter is a little less than that used for the 500/600 (which has a 44-inch fan).

With seating up to 12 passengers, the G400 will have the same cabin width as the G500/G600 and much of the same technology found in the G700. Gulfstream is the first OEM to introduce a new product in the large-cabin segment in more than a decade. The Symmetry flight deck up front and a similar wing to the G500/G600 enable the common type ratings Gulfstream intends—to make the G400 more affordable overall as well as cost effective for flight departments to adopt and bring into service.

Gulfstream plans to build a total of five aircraft initially to put into flight test, with a first flight taking place in about 18 months. The G400 carries a \$34.5 million price tag—the base price plus a limited number of options; the standard-issue airplane will come almost fully equipped.

The G800

Even closer to daylight is the new top-of-the-line Gulfstream, the G800. With the most extensive range and the fastest top speed, the ultralong-range jet is anticipated to stretch its legs up to 8,000 nm at Mach 0.85 and cruise out to 7,000 nm at Mach 0.90. Its M_{MO} ? Mach 0.925.

With that reach, Gulfstream now closes in on the ultimate range question: Do we fly to the left or right to get to where we want to go on the other side of the globe?

"[The G800 will] ultimately replace the G650," Burns said, "but we've had a wonderful run with sales over the last couple of years, so we'll keep building it." The backlog will give Gulfstream an additional means of support as it brings the latest models in the series to fruition.

The G800 will seat up to 19 passengers in the cabin based on the G700's interior, already undergoing its own proving missions on long-distance segments. The jet shares a common engine with the G700 too—the Rolls Royce Pearl 700—which produces 18,250 pounds of thrust per engine. Steep-approach capability means more airports will be accessible to both the G700 and G800—and the larger airplane will still meet a takeoff distance of 6,000 feet at its max takeoff weight. Maximum cruise altitude tops out at FL 510.

Up front, the G800 features the Symmetry flight deck, with its combined vision system—integrating synthetic and enhanced vision systems, with dual head-up displays and Gulfstream's Predictive Landing Performance System.

With a standard price of \$71.5 million, Gulfstream expects entry into service in 2023. A first test aircraft rolled out in mid-September. A second test aircraft has already been produced as well, with many common processes in certification to that of the G700.

Burns spoke to the 15-year investment cycle put into R&D, from the beginning of General Dynamics' ownership of Gulfstream. Eleven airplanes have debuted under his watch. ●

HONDA
unveiled its
HondaJet 2600
transcontinental
concept at NBAA's
BACE.

TEXTRON AVIATION
debuted the Ci-
tation M2 Gen2
and XLS Gen2.

DIAMOND
revealed its
fully electric
four-seater,
the eDA40.

BLACKHAWK
shared plans for
a Pilatus PC-12
power upgrade.



Business Aviation Commits to Net-Zero Carbon by 2050

OEMs drive for 2 percent fuel-efficiency improvements each year through 2030.

BY JULIE BOATMAN



Leaders from across the business-aviation community came together in mid-October at the National Business Aviation Association’s Business Aviation Convention and Exhibition in Las Vegas—and came away pledging to an industrywide commitment to net-zero carbon by 2050.

Ed Bolen, president and CEO of the NBAA, and Pete Bunce, president and CEO of the General Aviation Manufacturers Association, joined International Business Aviation Council director general Kurt Edwards in building on the 2009 Business Aviation Commitment on Climate Change goals, which included: reducing carbon emissions 50 percent by 2050, increasing fuel efficiency 2 percent per year from 2010 to 2020, and achieving carbon-neutral growth by 2020.

The updated goal? To drive toward net-zero carbon

emissions by 2050. The groups also plan to sustain the fuel-efficiency increases by 2 percent each year from 2020 to 2030.

“I’m incredibly proud to say that the industry is on track to meet or exceed those goals,” Bolen said at a media breakfast launching the first full day of convention. “This is a testament to the value of a unified partnership among operators, manufacturers, fuelers, service providers and many others. With our collective focus and determination, we can achieve carbon neutrality in our lifetimes.”

“As higher blends of [sustainable aviation fuel] become approved for production, we will be able to further optimize fuel efficiency through technological advancements to achieve

our environmental goals,” Bunce said. “Our industry also has a proven track record of capitalizing upon innovations in the air traffic control infrastructure to further reduce emissions. Additionally, dramatic improvements in avionics and data communications capabilities will increase operational contributions to reducing emissions. When merged with the exciting new designs employing electric distributed propulsion, hydrogen and SAF hybrid aircraft, we are confident innovation will keep us marching toward our net-zero goals.”

GAMA’s 2021 chairman and Daher senior vice president Nicolas Chabbert spoke on behalf of business-aviation OEMs in expressing support for the ambitious goals: “We need to think of SAF as aviation fuel—period.”

Stephen Yeates

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Honeywell Anthem Flight Deck

Connecting the cockpit to the cloud

BY JULIE BOATMAN



With the debut of Anthem, Honeywell proposes to address this critical question: How do you bring the pilot all of the information and tools they now have at hand without severing their connection to the environment through which they fly?

It aims to do this by keeping the pilot within a seamless space—enveloped in apps and targeted information—from the time they conceive a flight plan and climb on board the airplane until they stop in the chocks at the other end.

Honeywell revealed the Anthem avionics suite targeted for a wide range of platforms, including single-engine turboprops, business jets, transport-category aircraft, rotorcraft and VTOLs. The company posits that the scalable, flexible flight deck will enable the integration among pilot, aircraft and environment regardless of the aircraft.

The customizable software underlying the shiny new hardware can be adapted to fit “virtually every type of aircraft and flying vehicle,” according to company representatives. This point was emphasized by the fact Honeywell demonstrated the flight deck in a simulator based upon the Pilatus PC-12 at its launch event in New York in early October. In attendance were customers spanning the matrix from Bombardier to Boeing, with a special appearance from Lilium chief operating officer Yves Yemsi.

Vice president and general manager of avionics for Honeywell Aerospace Vipul Gupta identified four key areas in which technological advancement powers the new concept. A reduction in the weight of an average laptop

computer equates to a 50 percent reduction in the weight of the hardware powering Anthem. Connectivity is now reaching ubiquity, utilizing cellular, satellite and Wi-Fi networks. Creative integration with complex aircraft allows for those vehicles to function with greater autonomy—automating manual tasks for single-pilot cockpits or complex tasks to reduce workload overall. Scalable, flexible software architecture enables disparate systems and third-party apps to come together to deliver information to pilots from preflight to postflight.

The flight deck features large multifunction displays with touch functionality and uses that connectivity to deliver “always on” access to data. This allows outside applications—including early partner ForeFlight—to display information such as weather and flight-plan

information on the screen alongside other aircraft systems and flight instruments.

Using apps like ForeFlight as an example, Gupta illuminated exactly how the flight deck would potentially link the preflight preparation completed at home by the pilot with the arrival at the hangar and aircraft initialization.

Currently, pilots blend use of a tablet with an EFB app with websites for preflight data—such as a weather cam at the destination airport and possibly other apps for flight-department tools. Through the use of Anthem’s flexible yet secure browser, Honeywell projects that most any app or data feed short of Netflix could be displayed up front.

The ForeFlight app helped demonstrate another feature of Anthem: Honeywell’s SmartMap protocol. This functionality allows the pilot to expand a base map from one display across to others, widening the view instead of losing information when zooming in or out.

Anthem also incorporates an evolution of Honeywell’s runway overrun alerting and awareness system (ROASS)—the follow-up to the runway awareness and advisory system (RAAS) it first certified in 2004. ROASS calculates a position based on the aircraft’s total kinetic-energy state and depicts that on the runway—and shifts the pilot’s perspective on the PFD from a POV to a bird’s-eye view in the event of a loss of thrust on takeoff, landing overrun or other emergency.

Honeywell anticipates certification for Anthem on its first aircraft platforms in 2024. ●

Courtesy Honeywell

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The Beech Staggerwing (a 1938 D17S model) departed Victoria International Airport (CYYJ) in Canada after attending the Victoria Flying Club's open house. The graceful biplane has also been a flying demonstration of the past at the Abbotsford airshows and resides on the lower mainland of British Columbia. Photographer Aaron Burton captured its elegant departure on September 17.



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● **Martha King** and John King were recently inducted into the National Association of Flight Instructors Hall of Fame. They have shared teaching aviation, and flying, for more than 50 years.



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TRAINING & TECHNIQUE

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I learned about flying from that

NO. 965



A Flutter in the Gauge

An imminent problem turns into a dramatic night.

BY BILL JAMISON

Oh, those early flying years—making no money but flying for a living. I had my first job after graduating college as a flight instructor in Indianapolis. I was married to a registered nurse who could support us, and I could go flying every day.

It was a beautiful Indiana winter morning in 1973. One of my instrument students owned his own aircraft, a Cessna 210, and was letting me borrow it for fuel to take a quick two-day vacation to Disney World in Florida. We'd been married for not quite two years, with

no children yet—three to come later—and we invited our chief of maintenance, Jerry, his wife and their two small children to go with us.

All six of us packed up and had a wonderful flight down, first to Memphis (KMEM), Tennessee, for fuel, then Daytona Beach (KDAB), Florida, for more before arriving at Orlando Executive Airport (KORL). Well, after one great day at Disney, it was time to head back to the cold, desolate state of Indiana.

The preflight and engine run-up seemed fine—I mean, after all, I had the chief of

● **Bill Jamison** started flying in 1968 and retired from commercial flying in 2012. He has flown as captain for TWA and American Airlines in MD-80s, Boeing 727s, 757s and 767s, and L-1011s.

Joel Kimmel

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maintenance with me. We both noticed what looked like a flutter on the oil-pressure gauge, but good pressure registered on the gauge.

Takeoff was smooth—the night air crisp and clear—and we were off for Chattanooga (KCHA), Tennessee, for our first fuel stop.

I'd filed an instrument flight plan, yet it still seemed like there was a flutter on the oil-pressure gauge. The engine was running smoothly, but Jerry and I both decided to stop before the Smoky Mountains and check into this.

I was about to change our destination with Atlanta Center when it happened. The engine sputtered and stopped. I called ATC, and when restart was futile, I announced that I had lost my engine and wanted to spiral down to the airport below me.

I'll never forget the next two broadcasts from the controller: "I understand you lost your No. 1 engine?"

I reply, "No, I lost *the* engine."

"Oh, you're cleared to do whatever you want. Let me know how it turns out!"

Fun aside now. I'd trained hundreds of students in engine-out procedures in single-engine airplanes. Set up best glide speed, select the best landing spot. Things were a little more difficult than with my students though. It was night, I was in a retractable-gear aircraft that uses the engine-driven hydraulic pump to operate the four gear doors and the gear itself—and I had my wife and another family on board.

You don't want to get too "dirty" with a lot of drag while gliding, but I wanted to use the windmilling prop to assist in putting down the gear. (No gear-up, dead-stick emergency landing for this pilot that night.)

Well, lo and behold, the gear came down before the slowing air-speed stopped the prop. We spiraled

correctly and touched down as if nothing was wrong. We coasted onto the FBO ramp and came to a halt near the fuel pump. "Need some fuel?" asked the lineman scurrying up to help. "No," I said. "It's a little bigger problem than fuel for us tonight." I later found out that my wife was asleep as we glided down and was awoken by the other woman telling her that she didn't want my wife to die in her sleep.

Nothing could be done to determine the fix for the airplane that night. We found out later that the No. 6 cylinder ring had cracked and then broken, causing the loss of all oil pressure.

And the airport where we landed? Oh yeah, it was in Eastman, Georgia—you know, of Eastman Kodak Co. fame. Anyway, a new engine was shipped there, and Jerry and I returned a week later to install it and fly home. That is another story, but I learned about flying from that, too. ●

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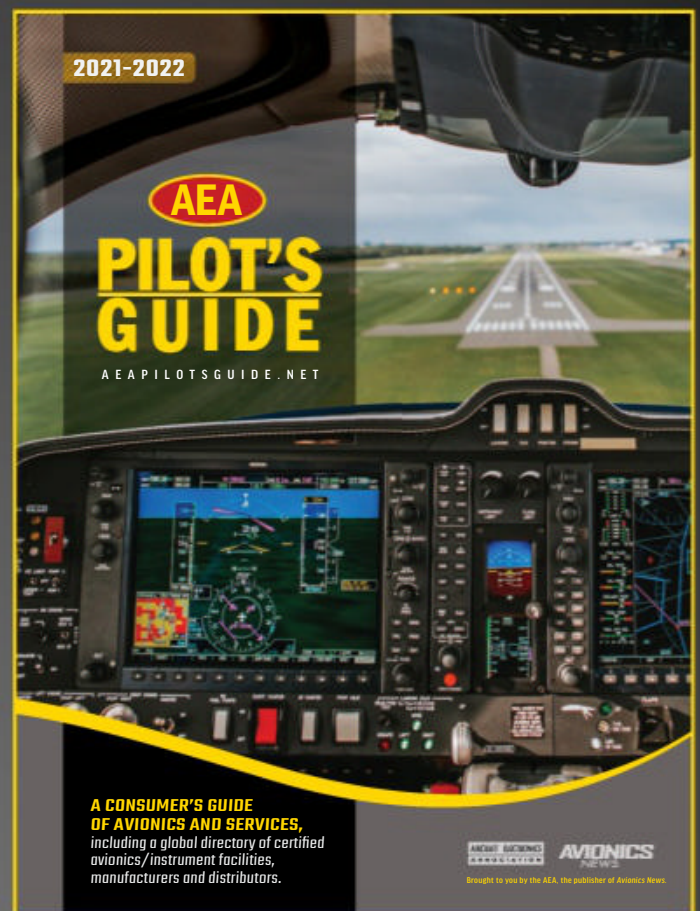
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Lake of the Ozarks LOC DME Rwy 22

A popular lake destination or midcontinent fuel stop for pilots

BY JASON BLAIR

Dropping off a passenger to visit the new riverboat casino at the Lake of the Ozarks? Hanging out on one of the biggest lake destinations in the middle of the country for a week? Or just needing a good fuel stop as you pass through—you might find yourself landing at Lee C. Fine Memorial Airport at the Lake of the Ozarks, Missouri.

It's a purpose-built airport meant to handle larger aircraft than the two other airports a little closer to town that have maximum runway lengths of 2,800 feet and 3,200 feet, respectively. Lee C. Fine Memorial Airport boasts a runway length of 6,500 feet and is served by a LOC/DME approach to Runway 22.

● **Jason Blair** is a flight instructor, an FAA DPE, and an active author in the general aviation and training communities.

A Localizer, Not Glideslope

A localizer DME approach, this particular approach does not offer a glideslope. While localizer precision laterally is helpful, the lack of a glideslope means this approach is nonprecision with a minimum descent altitude. A pilot will use the localizer and DME (no time is available on this approach) to descend to the missed approach point at 4.7 DME.

B DME from the VOR

Speaking of DME, unlike many localizers that have DME from the localizer itself, this DME comes from the SHY VOR. Make sure you have selected the proper source for DME when you are flying this approach because DME is required for it.

C DME Arc

Initial approach fixes at ZOPUD and BARTI are listed from which pilots could choose to establish themselves onto the DME arc to feed inbound on this localizer. While many pilots tend to shy away from doing these, a little knocking off of the rust on these procedures can make them effective methods to establish on the approach from the en route environment. Coming from the east or west, respectively, a pilot might choose these points to feed onto the approach when vectors are not provided instead of having to do any course reversals. The good news for many is that most modern GPS navigation systems will do these DME-arc procedures easily when programmed correctly.

D Feeder Routes

While BARTI and ZOPUD are intersections that a

pilot could navigate to from the en route environment, they are not technically fed via feeder routes from the SHY VOR, even though radials are given. These radials are not depicted in the heavy arrow style that is used to depict an actual feeder route as a part of the approach procedure. A little harder to notice, there are two depicted on this chart. A feeder route from the Springfield VOR to the SHY VOR and one from the SHY VOR outbound along the localizer—which would require a course reversal after passing the PICYU waypoint—are both depicted. A pilot could choose either of these and be able to descend to a lower altitude once outbound from the SHY VOR to 2,500 feet. This is lower than on the DME arc and might be something a pilot would choose to do if there were icing or, even better, a chance of getting below a cloud layer and breaking out earlier.

E Simple Missed—but Close

The missed approach on this is pretty straightforward. A pilot would climb straight ahead to the SHY VOR and hold inbound with right turns on the 217-degree radial (037 degrees inbound) at 3,100 feet msl. That being said, it is pretty close. Going missed at a DME point of 4.7 nm from the VOR and flying to the holding point at the VOR is going to happen fast. A climb, and flying straight ahead for just under 5 miles, leaves a pilot needing to stay on top of aircraft configuration before entering the hold with a course reversal.

KAIZ/AIZ FINE MEML

JEPPesen KAISER/LAKE OZARK, MO
6 AUG 21 (11-1) CAT A, B & C LOC DME Rwy 22



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Down upon the Suwanee River

When you fly low, things may reach up to get you.

BY PETER GARRISON

On a January afternoon in 2017, a sport pilot, 61, flew his amateur-built Buccaneer amphibian from the Orlando, Florida, area to Blue Springs State Park in Orange City to meet a friend and camp there beside the Suwanee River. The two-seat airplane, powered by a pylon-mounted 80 hp Rotax, had been built in 1992; the pilot had purchased it from the builder nine months prior.

The pilot, who had not visited the area before, flew up and down the river for some time looking for his friend. When he located his friend—just arriving—he landed northward on a straight segment of the 100-yard-wide river and tied up at a boat dock.

Learning that his friend was about to go downstream on a paddleboard to hunt for a dog's life jacket that had fallen into the water earlier in the day, the pilot said that he would help in the search after he had unloaded his gear from the airplane.

A short time later, the Buccaneer took off northward, made a 180-degree left turn, and dropped down to treetop level to follow the river downstream. In the meantime, the paddler had retrieved the life jacket and was making his way back toward the campsite. His view was obscured by trees at a bend in the river, but he heard the airplane's engine stop suddenly.



● **Peter Garrison** taught himself to use a slide rule and tin snips, built an airplane in his backyard, and flew it to Japan. He contributes *Aftermath* to *Flying*, along with his well-loved column *Technicalities*.

No Room for Error In a similar accident that occurred just nine months after this one, a Cessna 172 collided with power lines 40 feet above the Mississippi River near Ramsey, Minnesota. The 300-hour pilot, 47, most probably failed to see the power lines—although they were marked by red balls—because he was coming around a bend in the river and facing the evening sun.

The NTSB included the pilot's "personality" among the causes of the accident. He was known to be a person who could not resist the impulse to do reckless things and brag about them later. His instructor urged him to cool it and, at one point, sardonically suggested that if he intended to die in an airplane crash, he should at least not take his wife and son with him.

He took only his wife.

An 8-year-old boy saw the accident from upriver, nearly a mile away. He said that the airplane was flying below the tops of the trees lining the riverbanks when suddenly it flipped over backward and fell into the water.

It took the paddler and another would-be rescuer three or four minutes to reach the airplane. It lay inverted in shallow water. They tried to extricate the pilot, but he was already dead from impact injuries.

Directly above the wreckage, several power lines crossed the river.



The power lines most likely disappeared against the forest backdrop.

Their presence is indicated on the Jacksonville sectional chart by a tiny tower icon. There was nothing—no pennants, no red-and-white balls—to enhance the visibility of the wires themselves, but then there was little reason to expect a 40-foot-tall boat or a low-flying airplane to pass by here. However, a conspicuous 100-foot-wide clear-cut path marked the trail of the wires through the forest on both sides of the river. Because the

pilot had flown over the power lines and touched down beyond them when he landed, it seemed unlikely that he had not been aware of them.

The National Transportation Safety Board confined its determination of the probable cause of the accident to “the pilot’s failure to see and avoid power lines while flying at low altitude.” That is exactly correct, but why did it happen?

The NTSB’s public docket on the accident supplies a few interesting details. The pilot and his friend were acquainted through the local hang-gliding community and Facebook. The friend described the pilot as “an icon in the community” and experienced, with 9,000 or 10,000 hours in light-sport aircraft.

Now, few people have that much time in light-sport aircraft because the category came into being only a few years ago. Of course, he could have just meant small, sporty aircraft. But while his logbook was not found, the pilot’s recent medical-certificate applications were. In 2014, he had reported 982 hours of flight experience. Two years later, he reported 8,000 hours. By the time the information reached his friend, his time had swelled even further.

Now, exaggerating one’s flight experience is a venial sin—just so much harmless bragging.

What strikes one as odd about the story of the airborne search for the life jacket, however, is the disproportion between the means and the end. To get on a paddleboard and go downriver looking for a life jacket makes sense; to use an airplane for such a search does not. The paddler can scan the banks at leisure for the brightly colored object. At 70 mph, or whatever the searching speed of the Buccaneer might be, its pilot could not take his eyes off the shores for an instant. Maybe it would make sense if there were miles of river to search, but the life jacket was not long gone, and the Suwanee is not white water.

The grandiosity of the pilot’s action might be of a piece with his exaggeration of his flight experience. It might come from a desire to show off, to impress, to arrest the attention of

onlookers. If so, he would not be the first pilot so inclined.

So to begin with, there is a question of the pilot’s good judgment in deciding to conduct a search for a small object while flying below the treetops along a sinuous river—a river with which he was unfamiliar, and whose twists and turns he could not anticipate.

How could he forget the power lines that he had flown over half an hour earlier?

And then there is the question of situational awareness, or at least of memory. How could he forget the power lines that he had flown over half an hour earlier? Perhaps it’s significant that when he landed over the power lines in the first place, he did not expect to encounter them again; there was a bend in the river to the south, so he would certainly take off northward. Unconsciously, perhaps, he edited the power lines out of his memory as something already over and done with, and then failed to retrieve the memory of them when, on an unexpected new mission, he turned back southward after taking off.

Why did he not see the wires as he approached them? According to witnesses, the sky was gray and overcast at the time, and they were hard to see. Near eye level, they may have blended into the background of foliage. Perhaps the anticipation of soaring triumphantly over his paddling friend’s head distracted the pilot. And he may have been looking sideways and down, not up or straight ahead.

Flying at low altitude is enjoyable, but it is also dangerous. Part of the danger is that you will fail to notice an obstruction; part is that you are turning over some of the control of your flight path to the whims of the terrain. But the most serious danger is that, if you make a mistake, you will have very little time or space in which to correct it. ●

This article is based on the NTSB reports of these accidents, and is intended to bring the issues raised to our readers’ attention. It is neither intended to judge nor to reach any definitive conclusions about the ability or capacity of any person, living or dead, or any aircraft or accessory.



Every Airplane Requires a Checkout

Embrace the challenge of mastering a new machine.

BY JOHN ZIMMERMAN



An aircraft checkout today often means learning a new avionics suite.

A pilot I know occasionally tells the story of his brief checkout in a Piper Navajo to illustrate how far aviation training has come. This flight occurred during the prehistoric era of general aviation—the early 1980s—when transitioning to a new airplane often meant nothing more than grabbing the keys and reading the POH during the run-up. The pilot wanted more than that, so he went flying with the Navajo's owner. After a normal takeoff and a left turn to enter downwind, the owner pulled

back the mixture on the right engine, shutting it down completely. His plan was simple: If you can land it, you're checked out.

It's a great story, but for all the appeal of "the good old days," this is a terrible way to handle checkouts. New airplanes often mean more-complicated systems, new procedures and unique flying characteristics, most of which should not be imparted at 150 knots. Both the FAA and insurance companies have learned this lesson to some extent,

and now typically require some type of formal training when stepping up to a high-performance or complex airplane. The accident statistics suggest we're doing better today: The general aviation accident rate was more than 10 per 100,000 hours in the late '70s and early '80s, compared to fewer than 5 per 100,000 hours today.

I've spent the past few years checking out in a Cirrus SR22, then relearning the airplane after major avionics work installed a Garmin G500 TXi glass panel and dual GTN navigators. I had thousands of hours in high-performance airplanes before flying the Cirrus, including Cessna 210s and even turboprops, but my first few flights in the SR22 made me feel like a student pilot again. It took at least 30 hours before I really felt confident and started taking IFR cross-countries.

It's important to note, though, that such a decision was entirely up to me. There was no FAA-mandated training, and even the insurance requirements were minimal. Therein lies the problem: While a pilot checking out in a jet will have to complete a rigorous training syllabus in a simulator before being turned loose, the typical piston-airplane pilot can blast off for New York's LaGuardia Airport on their first flight.

John Zimmerman

● **John Zimmerman** grew up in the back of small airplanes and moved to the left seat at 16. Today, he leads product development at Sporty's Pilot Shop and flies a Pilatus PC-12 and Robinson R44.

How to handle aircraft transitions is not some obscure topic for flight instructors to debate; it's very much the future of general aviation training. We simply aren't making enough new airplanes to replace the current fleet. Only 1,312 piston airplanes were sold last year, compared with more than 17,000 in 1978. That means old airplanes with multiple upgrades are the norm, not the exception.

The value proposition is compelling: In the Cirrus, the new Garmin touchscreens are not just similar to the OEM glass cockpit from five years ago, they're also better in some important ways. A smart pilot could buy a used SR22 for \$250,000 and go crazy with new paint, interior, avionics and an overhauled engine. That would cost a lot of money, but at the end of the process, the owner would have a totally upgraded airplane for less than half the price of a new Cirrus.

Some pilots might bemoan the lack of new airplanes, but there's nothing wrong with this approach. In fact, it's exactly how housing works, where almost 90 percent of transactions every year are existing homes, not new construction. As former *Flying* Editor-in-Chief Mac McClellan once joked, "Maybe we built 30 years' worth of airplanes in a decade [the '70s]."

A 50-year-old airplane with five-year-old avionics introduces a training issue because no two airplanes are the same. A 2006 Cirrus SR22 with an Avidyne panel and a 2006 Cirrus SR22 with a turbocharged engine and Garmin avionics are completely different machines. And that's nothing compared with a Cessna 182, where a 1972 model will probably have a carbureted engine and analog gauges, and a 2019 model will boast a fuel-injected engine and a fully integrated glass cockpit.

A smart transition begins by recognizing the need for a checkout, but the next step is deciding what such a checkout should include. That means making a plan for both book work and flying. Before your first flight, spend some time with the POH, focusing on the engine and airplane systems. Even more important, study the

avionics supplements, which should be in the POH, and the pilot's guide.

In fact, avionics will probably require the most work, especially if you fly IFR. For the ultimate avionics training tool, consider a ground power unit.

As you gain experience, slowly but steadily increase the complexity of

your flights, adding cross-country flights, shorter runways and IFR trips (if rated). I write down any lessons learned immediately after the flight, while the memories are fresh.

Aircraft transitions are a great way to expand your skills as a pilot—and there's no check ride to stress about. Just approach them with a bit of care.



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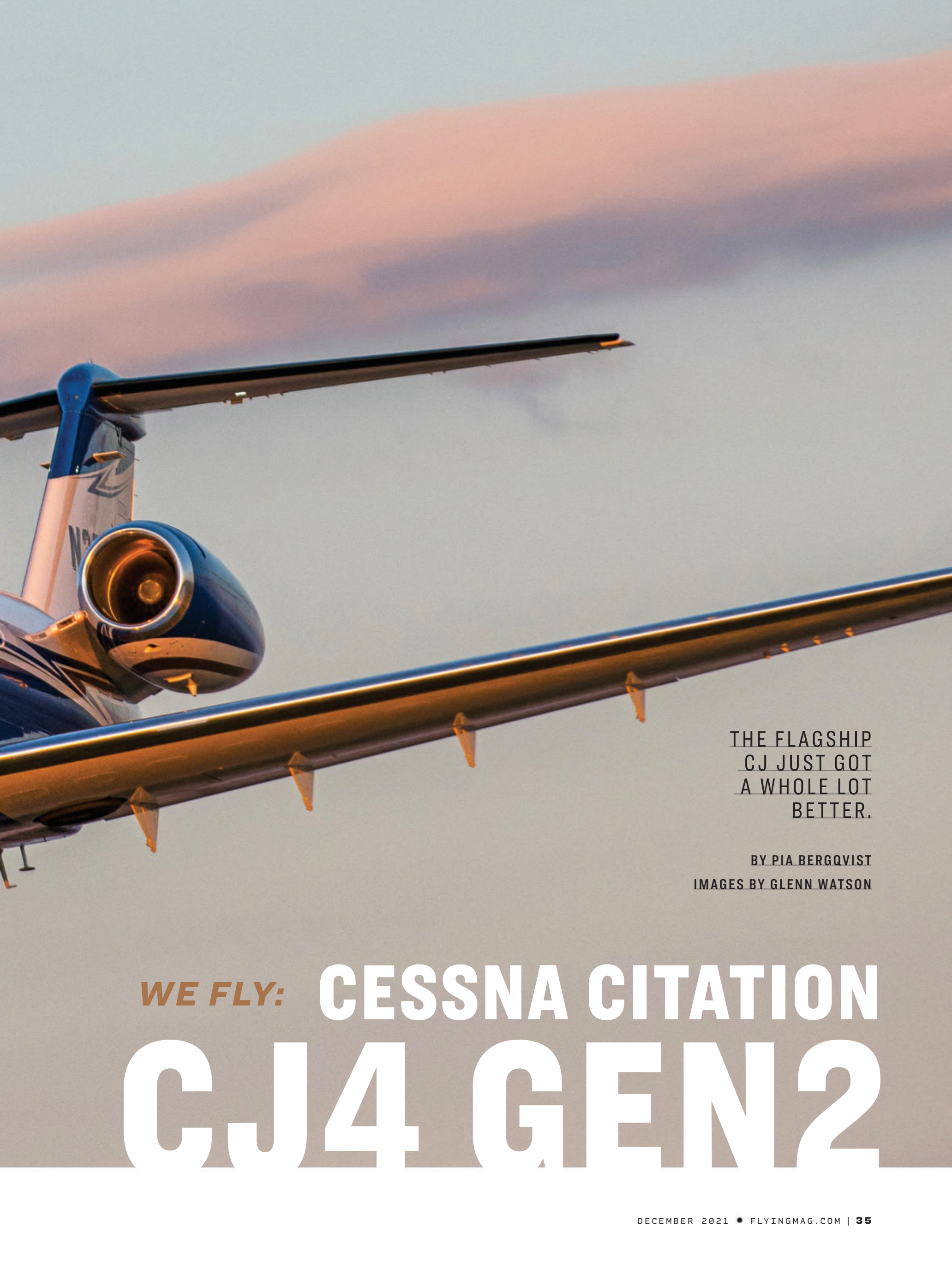
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THE FLAGSHIP
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BY PIA BERGQVIST
IMAGES BY GLENN WATSON

WE FLY: CESSNA CITATION
CJ4 GEN2

October 16, 2006, was my first day as manager of communications at Cessna Aircraft Co. It happened to be media day at the National Business Aircraft Association's annual Business Aviation Convention and Exhibition, and it was my first time at this highly sophisticated show.

Cessna's booth was extravagant, with massive TV screens showing video clips of Citation jets flying in front of beautiful backgrounds, highlighted by dramatic music. Then-president and CEO Jack Pelton announced three new airplanes that day, so it was a busy day for the communications team to say the least. One of the airplanes Cessna announced was the Citation CJ4.

With seats for up to 11 people, the Citation CJ4 Gen2 is the largest 525-series jet built to date. The all-metal twinjet shares many features with its siblings, including the external size of the metal tube and Williams FJ-44 turbofan engines. "The CJ4 offers the strongest performance and payload balance yet in the CJ series, with more standard features and passenger comforts than ever before," Pelton said. While this was the official announcement of the CJ4, Cessna had already accepted 70 orders.

In February of this year—15 years after Pelton announced the CJ4—Textron Aviation certificated the CJ4 Gen2. Cessna, which became a business segment of Textron in 1992, has previously used a simple "plus" for its upgrades. But Jimmy Beeson, technical marketing manager at Textron Aviation, said Gen2 is a new, standardized way to "demonstrate to our customer base that we are listening to their feedback and continue to invest in our legacy products." And as such, the CJ4 Gen2 delivers.

525 Legacy

The Citation CJ4 Gen2 was born into a storied legacy of airplanes coming out of Cessna's factories in Wichita and Independence, Kansas. The company's nearly 94-year history, spearheaded by Clyde Cessna, began with decades of extreme success in the single-engine- and multiengine-piston markets, building thousands of training aircraft for civilian and military pilots as well as owner-flown products.



Cessna Aircraft Co. started dabbling in jets in the mid-1950s, and its first bizjet offering was the Fanjet 500, which later became the Citation, named after a thoroughbred racehorse. It was announced in 1968 and achieved FAA certification in 1971. The airplane became an instant success—and Cessna delivered 52 Citation 500s in 1972. Following a long list of successful Citation models, Cessna's Citation X design team won the Robert J. Collier Trophy in 1996 for developing the first business jet to notch a cruise speed of Mach 0.92.

Until 1989, all Citations were certified to be flown by two pilots. But that year, Cessna announced the Citation-Jet—later "CJ" for short—to provide options for owners who wanted to fly solo. It developed into a series of CJs under the same single-pilot type certificate, the coveted 525 type. Today, Textron Aviation's 525-series models in production include the CJ3+, CJ4 Gen2 and M2, a derivative of the CJ1. The initial type-rating training



takes about 16 days of ground and flight sessions. While no new type rating is required to swap from one to another, pilots need to go through approximately five days of differences training when moving between models.

Exceptional Utility

With a range that spans the country and speed that gets you there fast, the CRJ4 is considered the flagship of the 525 series. Two FJ44-4A fanjets—each producing 3,621 pounds of thrust—propel the jet as high as 45,000 feet and as fast as 451 kias. With a full-fuel payload of 1,122 pounds and a takeoff-field length of 3,410 feet, it is a highly capable machine.

Using long-range cruise power, the CRJ4 Gen2 can go up to 2,140 nm, according to the company. That doesn't quite get you from Los Angeles to New York, but you can go from LA to Atlanta, from San Diego to Orlando, or from New York to Phoenix without having to stop.

CRJs share a fuselage tube, T-tail and engines (thrust varies).

From Denver—where I conducted the flight test for this report—we could have reached as far south as Costa Rica and as far north as the southern tip of Alaska.

But the CRJ4 Gen2 also shows great utility for shorter trips. The owner of the aircraft I flew for the flight test is the president and CEO of ADS—a company that provides disaster-response services, such as temporary housing and associated facilities—and he took delivery this summer of his new CRJ4 Gen2. While the owner doesn't fly the airplane up front, he has followed the classic CRJ ownership track. He started flying in a CRJ1 in 2017. He soon upgraded to a CRJ2+ and, this year, decided to go for a brand-new CRJ4 Gen2. "What happened is that we needed to go further faster," he said.

"Our work is never planned because that's what the word 'disaster' means," he continued. After owning the CRJ4 Gen2



Interior upgrades include the CoolView skylights and vanity in the lavatory (top left and above right); new seats and added power ports in the cabin (top right); and a galley outlet for a coffee machine (above left), plus an added step on the lighted airstair.

for three months, he had put 160 hours on the airplane. A few days before our interview, he conducted five meetings in one day in five states: Florida, Virginia, Indiana, Tennessee and Texas. There are times when he gets a contract to set up a 5,000-man camp in 72 hours. “The plane is critical, or the jobs fall behind,” and that can cost the company hundreds of thousands of dollars.

It’s not just the efficiency of travel that has helped the owner realize the return on investment. “We have had Wi-Fi in the last two planes, so literally it looks like a mini office in the back of the plane,” he said. “I can be back on the computer before the plane even takes off.”

Exploring the CJ4 Gen2

On a crisp, clear fall morning, I mounted the new and improved airstairs of the CJ4 Gen2 at Centennial Airport (KAPA) in the southern part of the Denver metropolitan area. Many CJ operators carry a step stool to get to the first step of the airstair. The CJ4 Gen2 adds a step on the bottom and a handrail that folds out from the door frame. These two additions make it really easy to step into the cabin. Sadly, it was too bright to appreciate the new lights on the stairs and the cool effect from the logo light that would have lit up the tarmac under the first step.

If you continue walking up the airstair, you’ll walk right into the side-facing seats. The airplane I flew had the optional two-seat couch. The backrests fold down, and the backside has a nonslip material and attachment points for a cargo net or straps, allowing the space to be used for additional luggage. However, the armrest between the seats protrudes above the folded backrests, so you can’t put an over-size flat item there. No need for that, however. The aft and forward cargo compartments provide 1,000 pounds between them, with 40 pounds of internal capacity found within the larger closet.

Between the entrance and cockpit is the galley, which has a newly designed countertop that pulls out to provide more space. There are several cabinets, some of which have drawers and stowaway doors that provide easy access to whatever is stored in the compartments. The power port in one of the cabinets allows for a regular coffee machine or Keurig/Nespresso unit. These can be replaced quickly and cheaply compared with aircraft-compliant coffee systems, which are not only expensive but can also take time to replace. A high-power port is an

option, and hot tanks are standard.

While bleed air provides heat and pressurization, the air conditioning is an electrically operated vapor-cycle machine. Pilots and passengers who are used to getting cooked on the ground because of insufficient air from an underpowered APU will love plugging into a ground power unit and getting terrific airflow. It was 23 degrees Celsius while we were going through the interior details—plenty warm to turn a jet cabin into a sauna. But it was nice and cool inside.

While it wasn’t time to “go,” I headed to the lavatory. The Gen2 has two CoolView skylights that provide a pleasant and open feel in that relatively small space. The new optional vanity features stone countertops and several compartments in which to store bathroom necessities. It’s a nice setup, but the mirror above the vanity appeared somewhat warped—perhaps a function of the shape of the bulkhead. Another useful feature is a handle that folds down from the ceiling for hanging clothes. The lav itself can be serviced from an external port.

While it’s not quite a stand-up cabin for an average human like me, walking through the cabin is easy since the seats and armrests can be pushed right against the cabin walls. The completely redesigned seats are extremely comfortable and swivel to provide optimum positioning. Tray tables fold out from the side walls, and there are plenty of power ports (USB and standard) in the cabin

and cockpit. Textron Aviation has its own interiors manufacturing facility in Wichita, so while the CJ4’s seats and six color schemes likely serve most customers’ wants and needs, modifications are possible.

The second row of seats slide way back, providing at least a foot of space between the knees of passengers in the club seats. The seats also recline completely flat, providing a comfortable—and welcoming—place to take a nap.

The potential for a proper nap is maximized by the new window shades, which can be operated from switches in the cabin or an app that also can adjust multiple cabin lights. The lights are dimmable, providing a pleasant ambience. The shades and lights can also be controlled from a panel in the galley within reach of the pilots. The pleated window shades have two sections: one that provides privacy but allows light to break through and one that provides complete darkness in the cabin.

With the cockpit beckoning, I deferred the nap and headed toward the front.

Cessna Citation CJ4 Gen2

Price as tested: \$11.5 million

Powerplants: Williams International FJ44-4A

Rated power: 1,321 lb. of thrust

Seats: 2 + 8/9

Length: 53 ft. 4 in.

Height: 15 ft. 5 in.

Wingspan: 50 ft. 10 in.

Cabin width: 58 in.

Cabin height: 57 in.

Wing area: 330 sq ft.

Wing loading: 51.8 lb./sq. ft.

Power loading: 2.36 lb./lb. of thrust

Max ramp weight: 17,230 lb.

Max takeoff weight: 17,110 lb.

Basic operating weight: 10,280 lb.

Max payload: 2,220 lb.

Payload, full fuel: 1,122 lb.

Max usable fuel: 5,828 lb.

Max operating altitude: 45,000 ft.

Max rate of climb: 3,854 fpm

Range, with IFR reserves: 2,165 nm

Max speed/M_{MO}: Mach 0.77

High-speed cruise: 451 ktas

Takeoff distance, max weight:

3,410 ft.

Landing distance, normal: 2,940 ft.







Flying the CJ4 Gen2

I sat down next to Textron Aviation pilot Don Woodward. Adding to the excitement of the flight was the fact that I had demo'd Woodward in the Cessna TTx about 13 years prior when we were both working for Cessna. Woodward gave me a choice of seats. Generally, I would always prefer the left, but because I have mostly flown jets from the right seat as a first officer, I chose that position.

Garmin and Avidyne have dominated my general aviation flying, but I've come to love the Collins Pro Line 21 avionics suite during my past few years of airline flying. While very familiar, the Pro Line 21 version in the CJ4 Gen2 has significantly crisper LCD displays and slightly different buttonology from the model found in the jets I regularly fly.

Going from Garmin to Collins—as a pilot would do if moving up from the Mustang or other CJ models, for

example—is quite a transition. The system is operated through hard buttons and menus that are not as intuitive as Garmin's touchscreen FMS. For those who reject the transition (personally, I like learning new avionics, but it's not for everyone), Textron Aviation offers the CJ3+. You lose one seat, about 35 knots on the top speed, approximately 125 nm of range and a few features covered in the sidebar ("What Makes the CJ4 Gen2 Different?"), but the CJ3+ is still a capable option for pilots who would rather fly behind the Garmin G3000.

The Pro Line 21 in the CJ4 Gen2 allows the pilot to obtain digital ATIS and pre-departure clearances—notable features for pilots who are used to writing down and reading back that information. Landing elevation is automatically set to schedule the pressurization system for the destination airport in a flight plan. Like



A The crystal-clear LCD displays of the Collins Pro Line 21 are not touchscreens. Data entry is made through the FMS, and multiple control panels can configure the MFDs and PFDs.

B The FJ44-4A engines are faDEC-controlled, making starts almost as easy as starting a car and engine management as easy as staying in the green.

C While the CJ4 Gen2 is certified for single-pilot operations, it's also configured for a two-pilot crew,

with full control capabilities and access to the most important systems from both sides.

D Navigation databases are updated through USB ports that are hidden behind a small access door on the panel.

E The extensive list of features includes TCAS, SiriusXM weather, radar, departure and arrival procedures, taxi diagrams with own-ship position, systems diagrams, and much more. Digital ATIS and pre-departure clearance capabilities are also available.

most avionics suites these days, the Pro Line 21 offers live traffic and weather, as well as full navigation capabilities including departure and arrival procedures. With proper weight-and-balance data, the system delivers the applicable V-speeds for departure to be entered for display on the PFD.

We were only three people on board with 3,800 pounds of fuel, so the demo can't be considered to represent performance at max take-off weight. In fact, for the flight, our takeoff weight was 14,000 pounds—more than 3,000 pounds below the max takeoff weight. But it was a way to check on the accuracy of Cessna's performance app. It told us the time to climb to 40,000 feet from Denver would be 13 minutes. To the service ceiling of 45,000, it would take us 18 minutes, though we chose to stop at FL 400.

Bright blue skies prevented me from evaluating the Collins MultiScan weather-radar system (which pilots apparently love for its automatic tilt capability), the anti-ice system (which is comprised of heated engine cowls and wing leading edges), or the boots on the horizontal stabilizer. The electrically heated windshield, which Woodward said prevents condensation

What Makes the CJ4 Different?

With seats for up to 11 occupants, the Citation CJ4 Gen2 is definitely on the top edge of the single-pilot spectrum. And size isn't the only thing that makes the Gen2 stand out from its 525-type brethren.

The CJ4 Gen2 has a closed-center hydraulic system, which operates at 3,000 psi versus 1,500 psi in the other CJs.

This system enables the modular feature of the speed brakes and allows for the use of multiple hydraulic functions simultaneously. The open center system of the other CJs only allows for one function at a time.

The CJ4 was also the first in the 525 series with a single-point refueling system and an electrically heated windshield, enabled through the airplane's electrical system, which has two alternators.

But the main difference is in the wing. All of the other CJs have straight wings of various lengths based on size, but the CJ4 Gen2's have a 12.5-degree sweep. In fact, the wing design is closer to that of the Citation Sovereign. Boundary-layer energizers at the leading edges help maintain laminar flow over the wings, and two stall strips at the wing roots help reduce the stall speed by causing the root of the wing stall first.

Like the Sovereign, the CJ4 Gen2 has three speed-brake panels on each side. The design team also incorporated other features from the Citation Sovereign's wings that allow for slower approach speeds. So, even though the CJ4 Gen2 is a bigger, heavier airplane, the V_{REF} speeds are comparable to or slower than the other CJs.

issues, has been standard on the CJ4 since 2010.

While unlatched doors or latches will generate a CAS message, the GPU port won't raise the alarm. So, it's critical to verify with the ground handler that the GPU is indeed disconnected before starting up.

The FJ44-4As are faDEC-controlled, making the startup almost as simple as that of a car. Just push the start and run buttons, monitor the gauges and CAS messages, and away you go. Speaking of easy, pilots will appreciate the fact that there are fewer memory items for emergency procedures compared with the CJ2 and CJ3 models, Woodward said. Technicians will be happy to know that the panel has an event marker that the pilot can push to highlight any unusual occurrences in flight to make it easier for maintenance personnel to troubleshoot.

The rudder pedals provide up to 20 degrees of turn and differential braking up to 90 degrees on the ground. It was surprisingly easy to taxi, and I pointed the CJ4 Gen2 toward Runway 17L. When cleared for takeoff, I lined up with the centerline and applied the brakes. I held them until we had achieved full power and





The CJ4 Gen2 can pair most major cities in the US nonstop.

released them slowly to prevent a big jolt. David Bodlak, our passenger who is also a Textron Aviation pilot, shot a video of the runway edge to see where we lifted off. Even though the elevation at KAPA is 5,400 feet msl, we lifted off the pavement at around the 2,000-foot mark. It was 23 degrees C—8 degrees above standard—so the hot-and-high performance boast that Textron Aviation gives the CJ4 Gen2 was confirmed.

At 240 knots indicated, we climbed at a steady 2,400 fpm, and going through FL 200, we were still climbing at 2,300 fpm. At FL 290, we transitioned to Mach 0.64, up to 40,000 feet. With Denver's busy airspace, we weren't able to make an uninterrupted climb, but we still made it to FL 400 in about 17 minutes—4 minutes above the app estimate for a straight climb.

At 40,000 feet with max cruise power, we were showing 438 ktas. At that altitude, the FMS told us we could get to either Chicago or Los Angeles in about one hour and 40 minutes—less than two hours total, including the climb. But the best speed is realized at 33,000 feet, so we descended and found a steady 451 ktas, burning a bit more than 1,400 pounds of fuel per side. Again, we were a bit on the light side, but it's nice to be able to see the promised numbers in real life, and at ISA+2, the flight conditions were not helping the jet.

The Pro Line 21 tracked the DUNNN3 arrival beautifully. All we had to do was manage the altitudes and speeds. The speed brakes are a clean-sheet design for

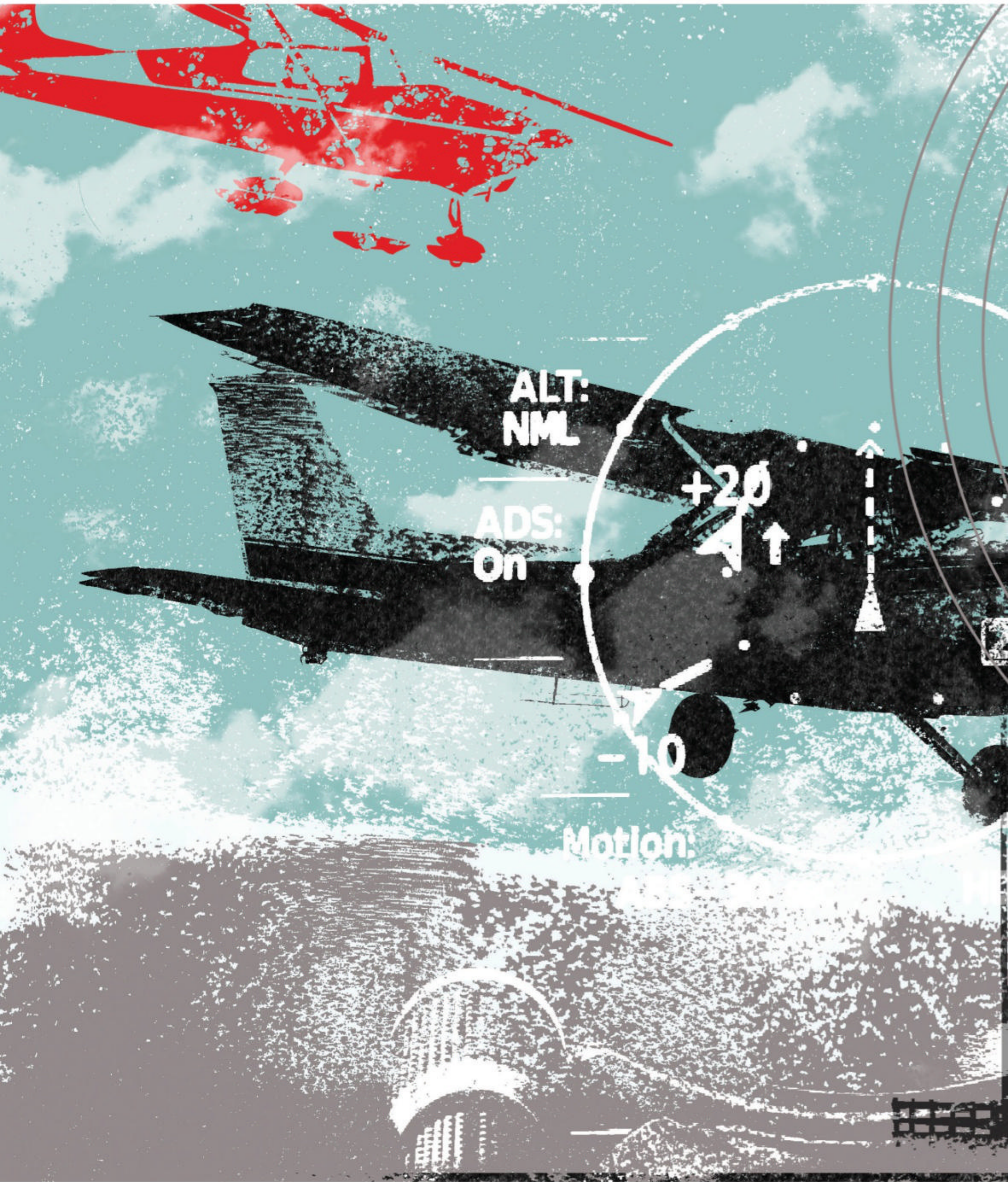
the Gen2. Unlike most speed brakes, which are either on or off—or have multiple stops—you can slide the lever to select the exact amount that you need. The speed brakes can be applied at any speed but need to be stowed before you reach 50 feet agl. There is an exception that allows for landings with the speed brakes on at airports with steep approaches and short runways, Woodward said.

I could tell that the airplane was designed with the pilot in mind. It's simply a joy to hand-fly, with a balanced control feel. Coming in on final, I got an unintentional demo of the TCAS II system. We were lined up for 17L, and another airplane was approaching Runway 17R, prompting the system to tell us to climb. Because Woodward didn't see the offending airplane, he immediately took the controls and went around. I was happy to fly another lap around the patch.

Our second attempt was clear of alerts, and once again, I lined up with 17L. The airplane felt totally stable on short final at around 115 kias, and the trailing-link gear helped me make a smooth landing. I felt no reason to stress the brakes or wheels to attempt a max-performance landing, so we simply rolled down to taxiway A16 and taxied back to the FBO.

The CJ4 Gen2 still exhibits the terrific performance that the model was intended to from the start. With the latest upgrades, Textron Aviation has a lot to be proud of at the top of the CJ series.

● **Pia Bergqvist** is an airline pilot, flight instructor and Mooney owner who is crazy about all things flying.





INSIDE OUT OR OUTSIDE IN?

What kind of pilot should you be?

By Amy Laboda



PERUSING THE INTERNET, as I often do with my first—OK, maybe second—cup of coffee in the morning, I came across a Q&A poll on pilotworkshop.com that stopped me cold. It asked: When flying in the airport traffic pattern, do you use onboard equipment to locate other aircraft?

The poll showed that of pilots who answered the question, 34 percent (more than 2,100 individuals) answered yes. This was in contrast to the 65 percent (more than 4,000) who said no, they only scan visually in the pattern.

There are two ways to interpret these results. The optimist sees a pilot keeping their eyes outside the cockpit with their head on a swivel in the traffic pattern, which is, according to FAA/National Transportation Safety Board data, the most likely point in a flight for a midair

collision to occur. Any place in space where airplanes tend to come together—such as an en route VOR, popular waypoint, or an airport—can be a midair hotspot.

What concerns me about this particular Q&A is that with so many aircraft equipped with graphically displayed traffic-spotting information in the cockpit, so few noted that they use it in congested airspace. FIS-B/ADS-B equipment is not being leveraged by the majority of pilots precisely when it could be of use.

If you know how to use it, of course.



I get it on one level. These pilots are saturated in the traffic pattern. There are aircraft on the ground squawking ADS-B, and those targets are painting within the typical “danger” ring on an ADS-B display, even though they may just be sitting on the ramp waiting for a taxi clearance.

But here’s the thing: That target on the ground may be crossing the runway you are about to land on—a very real threat. And there is traffic in the air at close proximity that is perfectly separated and sequenced from you, such as the guy on crosswind turning downwind while you turn base or final.

What you might only see on your ADS-B if you fly a low-wing or midwing airplane, however, is the pilot on the straight-in directly below you who isn’t talking at the nontowered airfield. Or with a high-wing, you might miss

Use all of the tools in your repertoire to find nearby traffic.

the aircraft a few feet above you, descending faster than you to “catch” the glideslope you are diligently following.

I’ve been there before and after ADS-B arrived on the scene in modern light-aircraft cockpits. I always zoom in and scan both my ADS-B display and outside my windscreen at both nontowered and towered airfields. Having a tower controller running the pattern does not make the airport immune to midair collisions, unfortunately. I’ve lost friends, and some of my friends have lost family, to midair collisions.

What I’ve learned in 42 years of flying is to use absolutely everything I’ve got to avoid close encounters with other air traffic.

SCANNING TECHNIQUES

While ADS-B can be an incredible tool on the flight deck, it needs to be incorporated well into a pilot's good old-fashioned VFR scanning technique. Here are a few tips on how to do that:

1

Before you approach the hold-short line for takeoff, scan base and final for any traffic on those segments. Then, take a look at the traffic display to find any targets that are in the traffic pattern to back up your visual scan.

2

After takeoff, lower the nose briefly around 500 feet agl to check for oncoming traffic.

3

Once you've departed the pattern, ensure that the traffic display is set to the appropriate range ring for your phase of flight. Recheck this periodically.

4

Use your outside scan generously and your inside scan judiciously; let one trigger the other so you are not favoring either exclusively. What does that mean? When you check for traffic on the display, back it up with a full left-to-right scan outside. When you scan outside, back it up with a quick check of the display.



It Goes Both Ways

When I first learned to fly, way back in the 1970s, collision-avoidance equipment in the cockpit was a pair of sharp eyes and a trained external scan. The FAA espoused a specific technique of scanning for both VFR and IFR pilots. It included taking in the external environment in 10-degree increments, keeping the eyes moving to increase the chances that traffic would be spotted by the narrow sharp-focus field in the center of the human eye, and maximizing the use of peripheral vision for noticing objects in motion that could conflict with one's flight path.

Clean windscreens were paramount to successfully spotting and avoiding traffic—and still are. Every IFR pilot was reminded that traffic and obstacle conflicts don't disappear once you are under radar contact and in the clouds. There were plenty of cautionary tales about professional pilots being vectored by ATC into terrain or traffic.

I didn't need a cautionary tale. As an instrument student, I saw the terror in my flight instructor's eyes as we were flashed by the belly of a twin Cessna climbing over us at extremely close quarters while we were in cloud descending through 1,000 feet agl, cleared for an ILS approach. The tower controllers at our airport were just learning how to use radar in those days, and what they had to work with was a Vietnam-era war-surplus mobile unit parked next to the VOR. Mistakes were made.

At least when we fell victim to this ATC blunder, it was just a near miss.

More than Just Collision Avoidance

The inside-out/outside-in pilot-technique discussion flies much further afield than simply asking the question, "Do you use your ADS-B in congested airspace?" Pilots today are capable of training from day one on sophisticated motion-based flight-training devices—sometimes

referred to as simulators, though the FAA separates them into many specific categories. The wraparound screens depict accurate virtual realities that are compelling, but so do the full-glass EFIS displays we often find in the cockpit of a modern flight-training airplane.

The question is, which does the flight instructor emphasize when they are teaching those first maneuvers? Is it the external horizon or the EFIS depiction of a horizon that the student globs on to as they begin their first steep turn around a point or slow flight and stall series? Are they taught to pitch up to precisely 3 degrees on the attitude reference for rotation at V_R (as depicted on the airspeed tape), or is the instructor emphasis on an "eyes outside" series of visual cues along the runway? Does the instructor push "numbers" flying over kinesthetic-sense—sometimes called seat-of-the-pants—flying? Do they bring up auditory cues and teach the student how to fly without direct reference to pitch or power instrumentation?

There are a million ways to teach a pilot how to fly an aircraft. A good flight instructor teaches the student how to fly by referencing cues both inside the cockpit and outside the windscreen, and pays sharp attention to whether that student is leaning too far in one direction—in their reference to one or the other—as they master the basic flying techniques that lead to solo flight.

As with all things in aviation, it is the balance at successfully performing many interlocking skills that makes an excellent pilot. As long as aircraft require pilots—and I believe we've got a while to go—this axiom will prevail.

The argument as to where a pilot should focus their attention first will go on until the computers do it all. What's important is that pilots learn to focus inside and outside the cockpit through all phases of flight for steady and smooth transitions, from takeoff rotation, to climb, level-off, descent and flaring, to touchdown.

● **Amy Laboda** began flying in 1978 and is a flight instructor, with credentials that range from gyroplane to ATP.



THE MAULE FAMILY

APPROACHABLE
AIRCRAFT

PHOTOS AND STORY BY JASON McDOWELL

Choose your mount—
the Maules do it all.



One of the very first steps in an aircraft purchase involves determining what capabilities we'd like our airplane to have, and it's laughably easy to check the boxes as we go down the list. Cross-country range? We'll take it. Load-carrying ability? Absolutely. Short-field performance? Sign us up. A five-digit price tag? Yes, please. An airframe built in the 1990s? Sounds great.

Before long, our wish list becomes as overloaded as a college student's plate at an all-you-can-eat buffet, and we eventually realize that compromises must be made. STOL aircraft rarely provide long-distance speed and range, for example, and certificated types less than 30 years old are typically fairly expensive.

The Maule family of aircraft, on the other hand, seems to provide most of these strengths with few compromises. Takeoff rolls of 300 to 500 feet are routine, and yet many provide cruise speed and range that approach even some types with retractable gear. Four adults and full tanks can be carried aloft at the same time. For just over \$100,000, it's possible to buy an example that's newer than the first Apple iPods.

Surely, I thought, there must be a catch. So, I took a dive into the world of Maules to investigate further and evaluate their suitability as an approachable aircraft.

Design

When company founder B.D. Maule designed the M-4 in the 1950s, he emphasized a few key values, including utility, durability and short-field capability. The initial examples rolled out of the factory in the early 1960s, and this basic formula has remained largely unchanged.

The Maule series is straightforward in a broad sense and more intricately detailed when it comes to the little things. Six basic models have been produced since 1960. All are high-wing aircraft with side-by-side seating, yokes, great load-carrying capability and fantastic STOL performance. All have steel-tube, fabric-covered fuselages, and with the exception of a handful of early models that had fabric-covered wings, all Maule wings are metal. Other than the five-seat M-7 and M-9 series, all have four-seats.

The first Maule was the M-4, notable by its smaller, rounded tail.





It's a recipe that has proved to work well. For more than 60 years, the various models have undergone incremental improvements and have utilized a wide variety of engines without losing sight of the original mission. The company is still owned and operated by the Maule family, and they still build airplanes designed with utility, durability and short-field capability in mind.

Model History

Though all Maules have retained the same basic characteristics, the company's model-number and naming structure becomes quite complicated when all the minor differences are taken into account. A comprehensive explanation of every model number and name used since the introduction of the type would require spreadsheets, footnotes and possibly also a decoder ring. For the

sake of brevity, we will cover some broad characteristics among the models and avoid detailing every defining feature.

The M-4 was the initial model, introduced in 1962. It's easily distinguished by the rounded tail that resembles a Piper Pacer. It was initially equipped with the 145 hp Continental O-300 engine and fixed-pitch propeller, and was later upgraded to more-powerful Continental and Franklin engines with constant-speed propellers. The first M-4s were produced for approximately 10 years, and a modernized M-4 briefly returned to production in the mid-2000s.

Because it's the oldest model, the M-4 tends to be the least expensive. The combination of a smaller vertical stabilizer and larger ailerons makes it superior to other Maules in crosswinds. Downsides include less compatibility with modification

kits offered by the factory and a less impressive fit-and-finish compared to later models.

The M-5 and M-6 improved upon the initial model by introducing a larger tail, larger flaps, a larger wingspan and higher gross weights. They also incorporated improved airframe systems, such as the M-6's flaps that are actuated with lower-maintenance torque tubes rather than the original cable system.

Models that are currently in production include the M-6, M-7, MX-7 and M-9. The 7-series Maules use a series of prefixes and suffixes to denote the configuration. An X in the model name indicates a slightly smaller fuselage, and the presence of a T indicates a tricycle-gear configuration. An MXT-7-180, therefore, is a small-fuselage 7-series Maule with tricycle gear and a 180 hp engine.

The -7 series also offers taildrag-



The Maule's 42-inch-wide cabin allows for a roomy instrument panel as well as good shoulder room for front-seat occupants.

ger fans a choice of main landing gear; the traditional oleo gear with shock absorbers that dampen rebound; and spring aluminum gear with fewer moving parts and slightly less drag. The spring aluminum gear legs are wider and offer greater stability, but the oleo gear neatly fits into the tracks of two-track dirt roads for easier off-airport access. Finally, the M-9 series is simply a version of the 7 series that incorporates an increased gross weight and a number of structural reinforcements.

Market Snapshot

A survey of Maules listed for sale at the time of this writing found 30 examples ranging in price from \$35,000 for a 1973 M-4-220 in need of an engine overhaul to \$199,000 for a low-time 2001 M-7-260C. The median price of the group was \$87,950, and the median airframe time was 1,321 hours.

Compared with other types, the average airframe time of Maules is quite low. This is partially a function of a fleet that is younger than most other types, but even among the oldest examples, it's rare to find a Maule with more than 2,500 hours on the airframe.

Flight Characteristics

By the numbers, the interior of a Maule is fairly spacious. The 42 inches of cabin width at the front seats is equal to that of newer Cessna 182s. But because the fuselage provides less vertical space, the seats are mounted lower and give a feeling of sitting closer to the floor like a Cessna 150 or 152. Visibility over the nose is better than many types but still might require a bit of a stretch to see forward.

Takeoffs are completed fairly quickly, even in the lower-powered models. The ample rudder and vertical stabilizer provide positive control throughout the take-off roll, and it rarely requires more than 500 feet to get off the ground. Deck angles during climb-out can become alarmingly steep in lightly loaded models with higher horsepower engines, and departure-end obstacles are long forgotten by the time you pass overhead.

In the air, a Maule exhibits few notable characteristics, save for the interconnection between the ailerons and rudder. At cruise speed, this enables the pilot to more easily remain coordinated in turns.

Many Maules incorporate two optional auxiliary fuel tanks outboard of the mains. The larger aux tanks of several models each hold up to 21 gallons of fuel, bringing the total fuel capacity of these models to 85 gallons and providing excellent range.

The example we flew while researching the type for this article was equipped with vortex generators. The owner explained that these noticeably softened the stall, and sure enough, stalls were relatively docile with ample tactile warning.

Few owners use words such as “docile” and “forgiving” to describe the landing characteristics of their tailwheel Maules. While they generally avoid describing the airplane as difficult to fly, nearly all caution new owners

MAULE'S COMET, FROM 1997

In the September 1997 issue of *Flying*, we took a look at the “basic airplane at an affordable price,” and little has changed in the intervening 24-plus years.

The 180-hp, tricycle-gear Maule Comet elicited kind words from former editor-in-chief Richard L. Collins, who picked that model out of the lineup in part for its similarities to another favorite of his, the Piper Tri-Pacer, but “with better lines.”

“All the tricycle Maules (160, 180, and 235 hp) have the aluminum leaf gear and all have the same size tires on all three wheels. That does give the airplane the appearance of a puppy with big feet, but it also enhances the rugged nature of the airplane.”

“The Maule seems to have superior low-speed handling qualities,” said Collins. “I did a stall, and it was gentle. On final approach, the recommended speed is 65 mph—you can go slower if you want to—and the airplane feels solid as a rock at that speed.”



to exercise an extra measure of discipline and respect with regard to ground handling in general and landings in particular.

Just as an airplane with benign stall characteristics will lazily and gradually mush into a stall—offering the pilot ample warning and ample time to recover—a tailwheel airplane with benign

effectiveness, but at low speeds, aileron authority can erode significantly. Combined with gusty conditions and lighter weights, positive roll control can become reduced, and this can quickly become the first link in a chain of events that lead to a loss of control. In addition, the aforementioned aileron/rudder interconnection works

the airplane is so capable, challenging conditions and landing sites must be correspondingly easier to negotiate—and some soon get in over their heads.

One owner summed it up nicely: “My Maule is a fairly straightforward airplane to fly—but a very nuanced and difficult airplane to fly well. I am constantly working on improving our relationship.”

“My Maule is a fairly straightforward airplane to fly—but a very nuanced and difficult airplane to fly well.”

ground-handling characteristics will follow suit, providing the pilot with plenty of opportunity to recognize and correct a landing that’s in the process of going wrong.

This is not the case with a tailwheel Maule. The window of opportunity to correct a tail that’s slewing sideways is shorter compared with similar tailwheel types like the Cessna 170. An inattentive or inexperienced pilot not receptive to the sometimes-subtle visual and tactile cues of an uncoordinated touchdown or ground roll is susceptible to a ground loop.

Owners attribute the less-forgiving landing characteristics to multiple factors. Compared with other types, a Maule places more of its weight on the tailwheel and, thus, positions more mass behind the main gear with more potential to swing outward. Beyond a certain point, it becomes impossible to correct this, and as inertia builds, the point of no return can be reached more quickly than with other types. The benefit is that the heavier tail enables heavy braking with less risk of a nose-over incident.

Aileron authority also comes up in discussions with owners. When flying an approach and landing on the backside of the power curve, the large vertical stabilizer in the propeller slipstream ensures rudder

against the pilot when intentionally cross-controlling the airplane during a crosswind landing.

Finally, the STOL capability of the Maule can lure some newcomers into a sense of invulnerability. These pilots reason that because

Ownership

Talk to any group of Maule owners, and they will invariably shower the airplane with praise, raving about many of the same things. Load-carrying ability is a favorite attribute, with useful loads hovering around 1,000 pounds and cavernous cabins that are easily accessible via the large rear doors. All owners appreciate being surrounded by a steel cage and express confidence in the robust airframe.

Jeff Bestwick (bottom)



The tailwheel versions feature a large, “heavy” tail with significant inertia.



This 1995 Maule M-7-235B has dual rear doors to accept wide cargo loads.

with Maule experience, and both of these downsides can be avoided with the selection of tricycle gear.

One ownership concern common to all Maules is the fabric fuselage covering. Fabric is light and easy to repair, but it has a shorter lifespan and is expensive to replace. Although modern covering systems last for several decades, complete replacement can cost \$45,000 to \$50,000 when paint, labor and associated work are accounted for. An owner would be wise to create an hourly fabric fund as many do to fund future engine overhauls.

ADs are all relatively minor and not overly burdensome. One of the most significant involves the replacement of wing lift struts, which is a reasonably simple fix. Factory support makes it easy to address ADs, as does advice from other owners on maulepilots.org, a vibrant message board and owners group where owners can network and exchange tips and advice.

The entire series of Maule aircraft does indeed seem to check many boxes at once, providing access to short strips, solid cross-country capability and excellent factory support for less cost than many comparable types.

The hidden gem, in our opinion, is the 180 hp MXT-7. Examples built in the 1990s have recently been selling for \$75,000 to \$85,000 and offer Maule's legendary STOL capability, with the economy and simplicity of tricycle gear and a fixed-pitch prop. All the benefits of a modern Maule with sure-footed ground handling come with notably less insurance expense.

Regardless of which model you choose, the benefits are numerous and legitimate. In the end, the Maule provides a number of strengths with relatively few compromises.

● **Jason McDowell** is a private pilot based in Madison, Wisconsin. He enjoys researching obscure aviation history and serves as a judge for the National Intercollegiate Flying Association.



Performance is another favorite aspect of the airplane. With legendary short-field performance, respectable cruise speeds and a healthy range, the airplane unlocks a wide variety of destinations.

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Virtually all Maule downsides are attributed to the tailwheel versions. Namely, the handling which many describe as less forgiving than other tailwheel aircraft as well as relatively high insurance premiums. The insurance cost can be minimized through the use of a broker

LIFE IN THE AIR

Taking Wing

FLYING Opinion



Headline Here

Pilot feedback leads to an update.

BY PETER GARRISON



The Temple of Speed

Reno entices even this altitude-oriented pilot.

BY SAM WEIGEL

While the venerable T-6s still race the course at Reno, it's the Sport and STOL Drag classes that are now commanding new attention.

Mark Loper

One of my grand theories of life, aviation and everything, of which I have quite a few—most in some stage of refinement or rejection, few of which I believe enough to commit to paper—is that there are speed people and there are altitude people. Aviation is the rare fellowship that features both, but for different reasons. Speed people enjoy action, competition, noise, crowds, and the pulse-pounding adrenaline rush of takeoff. Altitude people prefer peaceful quietude, thinking and reading, small gatherings of close friends, and the magical change of perspective that takeoff brings.

In childhood, speed people were inching off first base, looking for the first twitch of the pitcher's windup so they could take off and steal second. Altitude people were in right field wondering what kind of airplane just flew over and completely missing the lazy fly ball headed their way.

Once they grow up, speed people race sports cars; altitude people go on road trips. Speed people own center-console offshore fishing boats with outsize outboard engines; altitude people go sailing across far horizons at 5 knots while listening to Jimmy Buffett. Some of my best friends are thoroughgoing speed freaks. There's a great deal I admire in them, and a surprising amount of their thrill-seeking ways have rubbed off on me (motorcycling, dirt-biking, skydiving). But from earliest childhood, I have spiritually belonged squarely in the altitude camp.

All of which perhaps explains why I have never been to the Reno Air Races until now. On the face of things, overpowered P-51 Mustangs going the speed of sexiness 50 feet off the scrub-desert floor should have had me driving to Nevada the same sun-soaked summer of '98 that my beat-up Ford Ranger first pulled into Oshkosh, Wisconsin. But as I recall, my airy altitude-oriented teenage self was then focused on sharing that transcendent change of perspective with the girl friend I wanted to make

my girlfriend. (I failed miserably; she puked in my lap on a bumpy Wisconsin afternoon and declared me a great friend as I swabbed her vomit from my lap and the Cessna 150 cockpit.) I've never had a strong desire to go to the races since, presuming them to be a sort of sun-blasted aerial NASCAR, catering to speed tweakers of the Daytona infield set in Florida.

And yet, here I am in the top row of the grandstands at Reno for the very first time, watching intently as Jeff LaVelle's green-winged Glasair III carves around Pylon 9 and roars

across the finish line at well over 400 mph. Its double-supercharged Lycoming IO-580 engine is damn near bursting with some 80 inches of manifold pressure, putting out ungodly amounts of horsepower and driving his little composite kitplane to speeds it was clearly never meant to go. And I want to stand up and yell at the top of my lungs until my pitch matches the horrific scream of that apocalyptic powerplant. I want a giant foam No. 1 mitt to wave obnoxiously in the air. I want to spill popcorn and beer on the mild-mannered man in



Camaraderie marks the competition between rivals—and friends.

front of me clicking away with his \$5,000 telephoto-camera rig. I want to be Jeff LaVelle, flashing a few feet above the desert scrub at reality-bending speeds, a mere misplaced wrist-twitch from disaster. I let out an exultant *whoop* and a fist pump as the little Glasair roars into a steep bank around Pylon 1, and Dawn looks at me like I've gone completely bonkers. I have come to Reno, it seems, to sacrifice my dignity and identity as a lofty disciple of altitude on the blood-stained altar of the "Temple of Speed."

Characteristically, I ended up here more or less by accident. Having just recently completed our migration to the Seattle area, Dawn, Piper and I took off on a spur-of-the-moment road trip to look at a tiny house in Northern California we were interested in. Well, one thing led to another, and soon we were quaffing cab in wine country, then toasting the inimitable California sunset aboard a friend's sailboat anchored in Sausalito, and then surveying the epic sweep of Yosemite Valley. Five days turned into two weeks as we rediscovered all the West Coast delights of our newlywed youth. We turned north to Lake Tahoe, and it seemed inevitable that we should subsequently make our way down to Reno, where our friend Joe Coraggio was set to race his nearly stock Lancaster Legacy in his sophomore year, with tentative hopes of flogging his steed a place or two higher in the Sport Silver Class.

It was Thursday, the least-attended (and cheapest) day of the race weekend, and the grandstands were still mostly empty as Dawn and I took our assigned seats to cheer on the early morning warriors of the Formula 1 and Biplane classes. These are simple single-place airplanes completely impractical for anything but aerobatics and racing (most of the Formula 1 airplanes arrived disassembled on trailers), and completely attainable to the old-school speed-mad garage tinkerer of modest means. You can pick up an older Cassutt Special for well under \$20,000. Intriguingly, all the Formula 1 aircraft are powered

O-200 that powered the 150 in which I learned to fly. But despite the comparatively slow speeds (read: only twice as fast as a 150) and the lack of adoring crowds, the racing looked really, *really* fun. And like something I could see myself doing, were I to ever completely ditch my fuddy-duddy altitude-pilot status.

I have come to Reno, it seems, to sacrifice my dignity and identity as a lofty disciple of altitude.

The Jet, T-6 and Unlimited classes are equally entertaining with considerably faster lap speeds (or in the T-6's case, at least higher decibel output), but I didn't find these classes very relatable; I couldn't see any realistic way into any of those cockpits short of winning the lottery or belatedly devoting my life to professional warbird wrangling (an unlikely development, too many varied interests—jack of all trades, master of none). And as thrilling as it should have been to see *Dreadnought* thundering around the course at 450 mph—or jets flashing by at another 70 knots faster—I kind of expect outrageously powerful, all-metal military fighters designed to kill Nazis and subjected to 70 years of aggressive development to go stupid-fast. I especially expect jets to go fast. I'd personally like to take the Boeing 737 for a lap, and I suspect it could turn in a respectable time; though I'd definitely exceed G-limits, and the 118-foot wingspan would keep my line a bit high.

The Sport Class is what really intrigues me, and based on my cumulative Reno experience of spectating on a single Thursday, I'm ready to declare it the modern soul of pylon air racing. It's open to all experimental aircraft of under 1,000 inches displacement capable of a 200 mph lap. That's it. The simple entry rules have made it a hotbed of racing innovation. In its 23rd year, Sport has grown to become Reno's largest class, with up to 40 hopeful entrants chasing 32 race slots in four subclasses. Mind you, it's a fairly accessible class for

mere mortals: near-stock RV-4s, -6s, and -8s (albeit those built light and with a bit more horsepower than Van originally envisioned) regularly qualify in Sport Medallion. And this same class fields several entrants (namely Jim LaVelle, Andy Findlay, Jim Rush and formerly Jon Sharp) who show up every year with genuinely shocking examples of what modern experimental aviation is capable of.

I use the word "shocking" here in its most literal sense that doesn't involve considerable voltage. I feel like modern Americans have become pretty blasé to the incredible. Formerly shocking developments in politics, business, entertainment and sports fade from the headlines in 24 hours. Crime requires a triple-digit body count to be shocking anymore. Billionaires chasing each other to space in private spacecraft their own companies developed elicits indifferent eye rolls (and outright scorn for Richard Branson—he didn't even make the Kármán line). "Been there, done that" is today's byline of cynical cool.

I challenge you: Go to Reno, and watch a little composite kitplane—that you know damn well was built in someone's garage—as it darts 50 feet above the desert with the throttle wide open, the engine putting out twice the horsepower it was designed for, and emitting a commensurately appalling scream as it flashes by at 400 mph, and then tell me you're not shocked to your core. Tell me you don't want to yell and wave and spill your popcorn and beer. ("Are you not entertained?!") Tell me you don't imagine yourself in that cockpit, straining against the Gs pushing you into your seat and fighting tunnel vision as desert scrub flashes by your left wingtip at warp speed. Tell me you don't want that stick in your hand as you dive for the checkered flag, utterly alive and utterly in the moment with eternity in your fingertips. Tell me I've gone completely round the bend.

● **Sam Weigel** began flight lessons at 13 and worked his way up to flying for a major airline. He enjoys exploring, sailing and general aviation.

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Flat Sixes

Fanatical artisans

BY BEN YOUNGER

The two machines pictured below do not conform to the rules of economy of scale. Both are made by hand to some degree, and are done so to exacting tolerances in small numbers by dedicated craftsmen. Both have horizontally opposed six-cylinder engines. Both require a certain level of mastery to fully extract their potential. Both attract the mechanically zealous. Both fly.

We are currently experiencing a profound loss of craft in our world. As a society, we consume and we replace. We do not repair. There is no incentive to do so when goods are cheap. Efficiency has come to eclipse all other manufacturing qualities—most notably, quality. In this booming consumer culture, the individual artisan has been sidelined. There have always been exceptions, but they demand a higher price tag governed by the laws of volume. Beechcraft and Porsche are two companies that never lost the thread.

The Porsche 911 GTS and the Beechcraft Bonanza pictured were built 40 years apart on different continents. One in 1978, and the other in 2018; one in Kansas, and one in Stuttgart, Germany. But they were built by the same type of human—fanatical artisans. My people. Where some see a status symbol, I see functionality

taken to its logical conclusion. I used to own the airplane, while the car was generously loaned to me so I wouldn't feel out of place driving around Hollywood (I own a Ram pickup back east).

Karl Marx wrote at length about the alienation of the worker. "In your enjoyment, or use, of my product, I would have the direct enjoyment both of being conscious of having satisfied

a human need by my work, that is, of having objectified man's essential nature, and of having thus created an object corresponding to the need of another man's essential nature. ... Our products would be so many mirrors in which we saw reflected our essential nature." There is truth there.

Compare that with the worker on an assembly line who is estranged

Courtesy Ben Younger



Born 40 years apart but crafted from the same legacy of artisanal dedication.

from the final product by means of extracting all of his potential in a repetitive movement. His labor is rewarded with a wage, but he is removed from the satisfaction of completion because of his restricted role. Marx would argue this alienates the worker not only from his work but also from himself. He is unable to fully express himself within the framework of those who hold the means to production.

No, I'm not a Communist. I am someone who wants a deeper connection to the things I purchase. And I want to maintain those things over time, not throw them away. My current Bonanza has the same birth year as me—1972. I plan on taking as much care of it as I do of me.

Yes, I understand the larger needs of the masses and the impracticality of one worker putting together my pickup truck. But it doesn't mean we can't appreciate the artisan's contribution and try, where we can, to reward that work. I once bought a kitchen knife from Bob Kramer. He made the knife himself. He forged the carbon steel. He shaped and sharpened the blade, finally attaching

a handcarved wood handle at its completion. I never mention the knives I bought from Bed Bath & Beyond to friends who visit my home. But everyone hears about the Kramer and the man behind it. I will pass the knife down to my children. They will in turn tell Bob's story. This is not insignificant.

As airplane owners, we are privileged to live among craftsmen. I remember going into the shop at Ace Cylinders in Greeley, Colorado, when I had the engine in my airplane overhauled. Brian Rosin had the Continental 550 mounted on a stand in the middle of the room. He was alone and absolutely focused. I watched him measure, bolt, press and fit. Hundreds of pieces needed to come together in the right order at the right tolerances with the right tools. The work he does and the skills used cannot be acquired simply from text or an app. Brian learned from Joe Folchert, who learned from a builder before him. Know-how is passed down in the oral tradition from one craftsman to another. Am I romanticizing it? Absolutely. Does that mean it doesn't have real-world value? No.

You don't get to shake the hand of the individual who built your car's engine. Not so with your airplane. Engine builders welcome you into their shops, and these interactions are beneficial on all counts. Meeting the customer, the artisan sees where his hard work is going and enjoys the warm glow of recognition, thereby incentivizing him to continue to do good work. The pilot learns about the engine and the craftsmanship that went into building it. Leaving the shop, she carries with her not just the engine, but also a sense of comfort and security in knowing that an artisan put it together with care and deliberation. My contractor upstate is fond of saying: "You can have it cheap, fast or well-done. Pick two." In aviation, you can remove cheap and fast as options, and that's just fine. The stakes are that much higher in our world because you can't pull over to the side of the road when something goes wrong flying an airplane. Brian's artisanship is represented as a thing of beauty as

well as an existential safeguard for my life. His work checks a lot of boxes.

We may be, however, witnessing a resurgence in craft and artistry. It is beginning to resurface in organic farming and manufacturing. Small-batch and high-quality. There is a thirst for it. People are beginning to recognize the value in something that was made with care by another human being. And there are signs that the corporations are listening. If you look at a motor in an AMG—the performance arm of Mercedes—you will find a plate attached to it with the signature of the craftsman who put together that motor.

Beechcraft was sold to Textron in 2013, and the Bonanza is barely holding on under its new corporate ownership. A certain unnamed manufacturer that rhymes with "KIRRUS" introduced an airframe parachute system that obliterated all other sales of high-performance singles. Aside from avionics upgrades, the Bonanza has not functionally improved in many years now. Where there is no financial incentive, there is no innovation.

A publicly traded company cannot continue to produce machines at a loss. The trick is selling something else so profitable that it allows the artisans to continue their work unburdened by practical (read: economic) considerations. Porsche sells a lot of Cayennes, and they make a lot of money doing so—and so the 911 lives on. I hope Textron can find a way to do the same so my beloved Bonanza—the longest continuously produced aircraft in the world—can continue its run. True artisans (and artists) are less concerned with economic outcomes. This is a good thing; they should spend their days dreaming and drafting. Who knows, maybe if Textron Aviation were to let those fanatical artisans loose, they might innovate enough to both keep their artistry alive and make the corporations some money doing so. Crazy thought, I know.

● **Ben Younger** is a TV and film writer/director, avid motorcyclist, and surfer—but it's being a pilot that he treats as a second profession. Follow Ben Younger on Instagram: @thisisbenyounger.





Blue over Green, Tent in Between

I'm old, I'm cranky. Why do I keep air-camping?

BY AMY LABODA



Everything hurts. I'm not going to open my eyes. Oh, hell. Bladder warning. Reality check. I'm going to have to move.

Eyes open, I'm assaulted by the day-glo orange of the hyperlight tent I'm lying inside. There's a bucolic moment where I hear birdsong—and then something else. The rapid beating of blades on air. A helicopter: big, inbound. Where was that helicopter pad staked out?

The dome of the tent starts to move. Crap. Did I even tie down this thing when we crawled inside it last night? I know I tied down the airplane. I look over at my sleeping partner, who is snoring away in his sleeping bag. He's heavy enough; we're not going anywhere.

Ugh. I heave myself to a sitting position and pull on my shorts. I crawl to the door (this is a backpacking tent, not stand-up—even for me).

"Zippers should be banned," I mumble, forcing myself to be gentle so as not to tear the seams. Feet out, shoes slipped on, I emerge on hands and knees into a spray of dew off the rather-wet turf. My eyebrows are being blown back by the turbulence generated by the landing Coast Guard helicopter. Standing, I watch as an ambulance trundles up and disgorges a patient onto a stretcher. Within a minute, they are secured on board, and the wind pummels the tent once more as the rescuers depart. Then back to birdsong. And I remember my bladder—run!

No, actually. I don't run anywhere anymore. Late middle age is not always kind to former athletes. Maybe I just pick up the pace a little bit and usher a prayer of thanks that I am not forced to wait in a line for the bathroom dedicated to campers on this airfield. Inside, it is clean and warm, if a little damp from the previous occupant, who clearly showered. Functional. I'll take it.

If you're reading this column because you think I'm going to teach you something about backcountry flying, turn the page. I'm flying a Van's RV-10. I can certainly land on an excellently maintained grass field (thank you, Triple Tree), but rough or unimproved mountain airstrips are not on my list of options for anything but dire emergencies.

I do carry camping equipment on my long cross-country flights, however, for dual reasons: emergencies and because my retired airline-pilot husband and I are frugal. We like to go to really interesting places, but we don't like paying for fancy lodging. Every now and again, we'll indulge in a little group air-camping too. It's nice having friends to share a meal and a bonfire. A little less nice having friends see me in my camp pajamas pre-coffee the next morning, but hey, trade-offs, right?

When we travel solo, it is delightful to go places such as where I am now—Orcas Island, Washington—which allows airfield camping. It means we can afford a holiday in a secluded paradise where other accommodations are priced for those who value luxury. Town is an easy stroll from the airport, shops run from tony to kitschy, and waterside dining abounds. Renting a bicycle or car opens up miles of parklands, beaches, and even two modest mountains worth summiting. Renting something that floats might result in wildlife encounters you'll remember for a lifetime.

I can afford all that if I camp. Yeah, I'm cranky in the mornings until I get a couple of cups of coffee and a good stretch, but to date, it's all been worth the price of admission.

We find airfields such as Orcas by referencing the

● Amy Laboda began flying in 1978 and is a flight instructor, with credentials that range from gyroplane to ATP.

Recreational Aviation Foundation Airfield Guide. The graphics here are descriptive, and the page loads and updates quickly, depicting airports with camping all over the US, as well as those with co-located hotels or cabins, restaurants and recreational activities. Beyond that, the guide provides a “relative hazard index” to help you decide if the airfield meets safety specs for your aircraft’s capabilities and your current pilot proficiency.

How do I stay comfortable while camping? A quality hyperlight tent is key. You don’t want your camping equipment to put you over gross. Are you one or two people? Get the four-person tent if you are two. Get the two-person tent if you are one. These companies all exaggerate tent floor space.

Can you walk under your airplane’s wing? Consider bringing a tarp you can sling over a wing and tie down. Pitch your tent under the tarp and enjoy a much drier experience. Tarps are great sunshades too. It is lovely to set up a couple of lightweight camp chairs and a camp table under the tarp in the afternoon to watch arrivals and departures off the nearby runway, or in quieter venues to study the sunlight as it shifts on water or mountains, or both. With a low wing, we use our tarp as a ground cover, to keep the tent floor from getting too damp and facilitate faster breaking of camp.

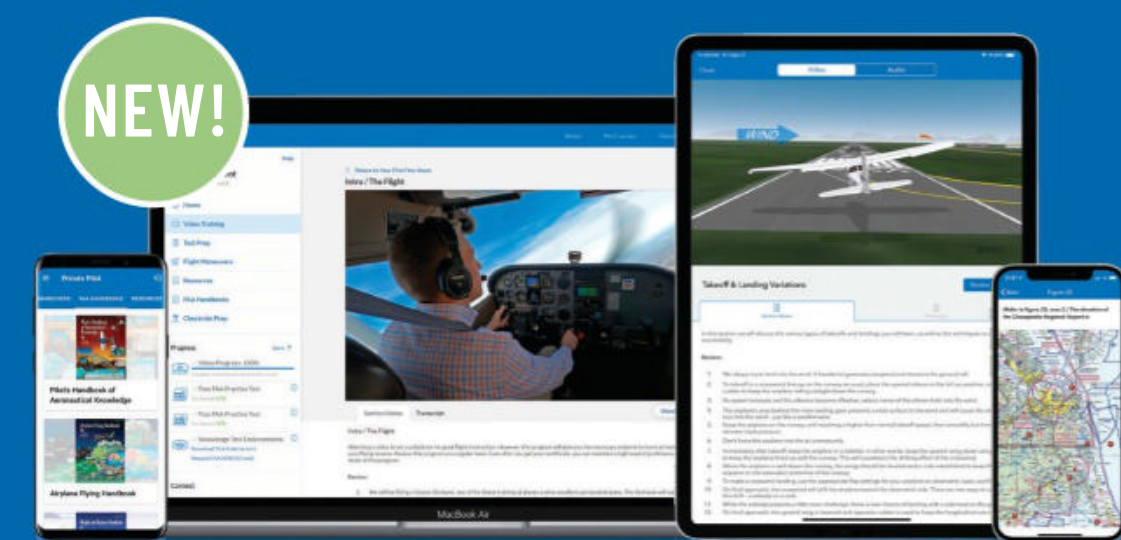
My sleeping bag is down, but I can shake the filling so it is all on the bottom, providing me with a comfortable

three-season mummy bag that weighs about 2 pounds and takes up almost no space. My sleeping pad is self-inflating and probably inadequate, but you can’t get two giant pads in a little backpacking tent. Anyhow, if my pad was comfortable, my partner says I’d never book a hotel room on vacation, and I’d ruin the economy, right?







For cookstoves, I am a minimalist. I only boil water on mine. I will cook but strictly things that can be made with boiling water. Mostly, I use my AeroPress to make coffee every day. That said, I do carry instant ramen noodles, instant oatmeal and Lipton onion-soup mix in my emergency pack. You never know.

I don’t carry a compressed-gas cookstove in my unpressurized airplane. Call it risk management. My minuscule stove folds open, and heat is generated by burning fish-oil briquettes. They are hermetically sealed, so they don’t smell, and they generate a ton of heat and light with one match. When cool, said stove slips inside the simple foam cooler we carry just in case we are going to a more-remote spot and need a few groceries. That said, most of my camp shopping is for salami, fresh baguettes, hard cheese, shelf-stable cream and refreshing beverages. Deli sandwiches, chips with canned dip and maybe more coffee.

No matter what you do when you’re air-camping, never run out of coffee. Just laugh about the rest. That’s what makes it fun. ●



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Fuhggedaboutit

Fifty-plus years of flying forgetfulness

BY DICK KARL



The author looks hard for the elusive flow on a recent flight in a Citation CJ2+.

If there was a legitimate explanation for flying my family of five at night from Hartford (KBDL), Connecticut, to Teterboro (KTEB), New Jersey, in a Cessna 210, I can't for the life of me tell you what it was. Though vaguely aware that the twinkling lights of Connecticut cities and towns had somehow disappeared, this pilot carried on, unconcerned. What I do remember clearly is watching the airspeed indicator drop to zero, seemingly in slow motion. A handy flashlight silhouetted a nice ice ball on the underwing pitot tube. We were in cloud and in icing. Oh, yes, I forgot—and I turned on the pitot heat. This was a case of more than forget-

fulness; this was stupid. This was not my first error of omission, and I would forget the pitot heat more than once through the years. Over a long and favored life of aviation, I have forgotten all manner of important matters, but none have done me in yet.

Aircraft ownership gives one an appreciation for carefulness. A Beechcraft Musketeer bought at auction while I was stationed at Fort Knox, Kentucky, was my first airplane. The engine started with a key, just like a car, but there was another switch, labeled "Master," that actually put power on the airplane and needed to be turned off when the day was done. The first time I forgot to

turn off the master switch and found a dead airplane, a mechanic said to me, "You'll do that three times and never again afterward." He was right.

There seems to be a thread of forgetfulness that runs through my flying career, and advancing age hasn't seemed to make it better or worse.

In one recent experience, things just weren't adding up. Our flight from Florida to New England was one taco short of a combination plate: We passed each fix a few minutes later than predicted by ForeFlight, and more important, more fuel had somehow disappeared. No big deal, though. The passengers had been briefed about a possible fuel stop and were understanding, even appreciative. I had an airport picked out for its familiar approaches, nice FBOs and excellent fuel prices.

My request to divert was immediately granted, and I was given the MALNR 5 arrival to Raleigh-Durham (KRDU), North Carolina, and a descent. I loaded the arrival, hit direct to the first fix, pressed the nav button on the mode-select panel, entered the new altitude in the altitude-preselect window, dialed in a vertical speed of 1,500 fpm down, and looked up the ATIS. While getting the weather, we were cleared to descend via the arrival and expect an ILS 23R. As I turned my attention to the arrival and approach charts, I felt the airplane make small heading changes consistent with the arrival. Suddenly, I heard, "Three Bravo Gulf, where are you going?" I looked up at the mode-select panel: The nav light was out; the HDG light was out. We were in roll mode, sailing over North Carolina like a pirate ship. What in the world? Well, I'd seen this before.

Jessica Ambats

● **Dick Karl** is a cancer surgeon turned Part 135 pilot who flies a Cessna Citation CJ1.

Once on the departure out of Las Vegas, New Mexico, and once on the arrival into Tampa, Florida. So how did I forget to closely monitor the airplane's track? How many times have I heard during recurrent training, "The mode-select panel is what you ordered for dinner; the PFD tells you what's coming from the kitchen"? Complacency and familiarity got me.

On a contract flight, I'd already loaded all the bags, and Capt. Bill was walking the passengers out to the Cessna Citation CJ2+. It had been my legs from Lebanon (KLEB), New Hampshire, to Nantucket (KACK), Massachusetts, and on to KRDU. When I turned on the avionics, Bill tapped the windshield. He mouthed words that looked like he was saying "Lulu." I was puzzled until Bill stuck his head in and said, "Landing lights." Sure enough, I'd left on the taxi lights.

Checklists work best when two pilots practice "challenge, verify,

respond" as standard operating procedure. A well-disciplined crew will use exactly the same words in the SOPs and on the printed checklists. Any deviation will be questioned.

The before-start checklist includes the annunciator panel, but I've seen a "door unlocked" after start more than once. In my Part 135 flying days, the guy who did the walk-around was the guy who had to get out and lock the hatch. Once this required taxiing back into the FBO on a snowy night.

In the single-pilot environment, actually saying things out loud is helpful, if a little puzzling to passengers. When the airplane isn't climbing like it is supposed to, better run that after-takeoff checklist again. Just because you flicked up the gear handle doesn't mean the wheels are all nestled in the wells. Same goes for the flaps. Muscle memory might say the flaps are up, but a double-check might prove otherwise.

The difference between "flow" and checklists is important. After-takeoff flow in our CJ1: "Positive Rate": Gear up. "400 feet V_2 plus 10": Flaps up. "1,500 feet": Set climb power, engine sync on, ignition off.


Then, out comes the checklist to challenge, verify by pointing, and confirm that I've done all these things. There's a reason for these simple tools.

So far, I haven't forgotten to lower the landing gear, but you know what they say: "There are two kinds of pilots. Those who have made a gear-up landing and those who haven't yet." In talking to pilots who have forgotten, there's a common thread: a distraction, be it a traffic warning, an unusual speed or an altitude restriction.

There's an important item that's not on any checklist: Saying thanks to the people who make flying so much fun. So, to the line folks, controllers and maintenance people who make it all possible: Thank you! ●



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Sisters

“Women certainly have the courage and tenacity required for long flights.” —Mildred Doran

BY PETER GARRISON

A year ago, I wrote an article about the 1937 disappearance of Amelia Earhart. In it, I mentioned—along with some general cautionary observations about range—the suggestion of a California Institute of Technology professor and a graduate student that the range of Earhart’s twin-engine Lockheed Electra 10 was less than is generally assumed. This mattered because much of the theorizing about what became of the famous aviator and her navigator, Fred Noonan, depended on their airplane’s ability to fly several hours past Howland Island, the microscopic excrescence of coral on which they intended to refuel before continuing to Honolulu.

My article drew a testy reply from Ric Gillespie, who has probably devoted more time to this subject than anyone else on Earth. His basic complaint was that my comments about the fate of Earhart and Noonan were half-baked and firmly based on my far-reaching ignorance of the topic. This I conceded. There followed a cordial exchange of emails and a copy of his book *Finding Amelia*, as well as several issues of *Tighar Tracks*, the journal of the aviation-archaeology group of which Gillespie is the head.

Finding Amelia is a densely documented, finely detailed and well-written book. First published in 2006, it does not include accounts of



Earhart’s fame required constant stoking, including a brief affair with the autogiro.

subsequent investigations that have bolstered Gillespie’s theory that the Electra ended up more or less intact on a reef on Nikumaroro, formerly Gardner Island, an atoll 350 nm south-southeast of Howland. A few shreds of physical evidence support

this claim, together with a number of radio messages heard by ham-radio operators in various parts of the world during the days following the disappearance.

Personally, I remain skeptical—not because of what was found but

because of what was not. The absence of substantial wreckage, including two big Pratt & Whitney radials, while not conclusive, suggests to me that the Electra wasn't ever there.

But Gillespie disagrees, and he knows much more about this than I do.

Amelia Earhart herself does not emerge unscathed from Gillespie's narrative. Initially borne on the wave of enthusiasm for aviation (particularly for long ocean crossings) that was engendered by Lindbergh's 1927 solo flight from New York to Paris, Earhart parlayed her charm, connections and physical similarity to Lindbergh—youthful, gangly and tousled—into an international celebrity that required constant stoking with new publicity. Lots of people wanted—or felt obliged—to help her, but she did not help herself. The single most important cause of her failure to locate Howland Island seems to have been her faulty understanding of the characteristics of her own radio equipment and that of the Coast Guard ship that had been stationed there to assist her. She did not know which frequencies to use for direction-finding. The knowledge was available, but she seems not to have made a serious effort to master it.

In the interest of full disclosure, my own flight planning has at times been pretty slapdash. But I didn't disappear, so nobody noticed.

Earhart represented the tail end of a distance-flying craze that lasted a decade. Many who had participated in it shared her fate, including a number of women who hoped to stake out some feminist territory in the generally masculine realm of aviation. For every flight that succeeded, two or three failed. Failure meant disappearance; the ocean kept its secrets close.

One young woman who preceded Earhart to a watery grave was a Flint, Michigan, schoolteacher named Mildred Doran. The 22-year-old Doran was enthusiastic about flying and persuaded the owner of a local oil company to sponsor an entry in a California-to-Hawaii air race that had been announced by James Dole, the Hawaiian pineapple magnate, shortly after Lindbergh's flight. Not

a pilot herself, she would ride along as a passenger. As with Earhart, the link between a great challenge and the money needed to confront it was supplied by somebody's desire for publicity: The Lincoln Oil Co. of Flint would get a lot of print from the attractive and articulate "flying schoolmarm," and the air race itself would boost public awareness of Dole's pineapples.

Both the pilots and the crowd urged Mildred Doran to stay behind, but she climbed into the back seat of the Buhl.

The date of the race was set for August 12.

Somewhat awkwardly for Dole, on June 28, two Army pilots—Lester Maitland and Albert Hegenberger—took off from Oakland, California, in a Fokker trimotor and arrived in Honolulu 26 hours later. Two weeks after that, Ernie Smith and Emory Bronte—the latter evidently the son of a *Wuthering Heights* fan—made the flight in a single-engine Travel Air, which ran out of fuel but alighted safely, if ignominiously, in a clump of trees on Molokai, Hawaii. The virgin route from California to Hawaii was beginning to look rather experienced.

You would think those two successful flights, added to the failure of Lindbergh himself to enter the race, might have taken the wind out of Dole's sails, but no—the die was cast. If anything, the 2,400-mile flight now seemed less hazardous than before.

Of the motley swarm of 15 airplanes and crews that entered the race, some were quite plausible: the Lockheed Vega prototype, a *Spirit of St. Louis* look-alike called *Dallas Spirit*, and the Phillips Petroleum-sponsored Travel Air 5000, *Woolaroc*. Most entrants were high-wing monoplanes in the style of *Spirit of St. Louis*, but the Lincoln Oil entrant, a Buhl Airsedan christened *Miss Doran*, was a sesquiplane (a biplane whose lower wing is much smaller than the upper). There was one twin-engine triplane that ended up in San Francisco Bay, the crew wading safely to shore; three other contestants were not so lucky,

dying when their airplanes crashed on the way to Oakland.

The race was delayed for several days when the newly formed Aeronautics Division of the Department of Commerce—later to become the FAA—imposed a number of rules and requirements on machines and participants the majority could not meet. Frank Phillips, the *Dallas Spirit* sponsor, inveighed against government meddlesomeness, as befitted his role as a self-made Texas oilman, but at least one of the requirements seems sensible enough: An airplane had to carry enough fuel to reach Hawaii, with a reserve.

Huge crowds came out to witness the departures. The first airplane to take off, a Travel Air, soon turned back with engine trouble. The next two crashed while trying to get airborne, but their crews were unhurt. Next, the beautifully streamlined yellow Vega *Golden Eagle* got off without trouble, followed by *Miss Doran*, which promptly returned with a sputtering engine. Three big monoplanes then went off, the last of which, *Dallas Spirit*, soon came back with fabric damaged by a badly secured access panel. *Miss Doran*, its engine problem fixed, was last to leave. Both the pilots and the crowd urged Mildred Doran to stay behind, but she climbed into the back seat of the Buhl. She was ashen-faced and tearful, some said, but determined to carry on.

The next day, *Woolaroc* touched down at Honolulu before a huge crowd. Two hours later, *Aloha*, which had taken off just before *Woolaroc* but navigated less precisely, arrived to the vast relief of the pilot's frantic wife.

In vain, the crowd searched the sky for the other two contestants, *Golden Eagle* and *Miss Doran*. They never came. Two days later, *Dallas Spirit*, with two aboard, took off to search for survivors. As the airplane zigzagged westward, it sent out a series of jaunty Morse code messages, and then, "... --- ..." in a final SOS.

Nine men and the young, brave and tenacious Mildred Doran were lost in the Dole Transpacific Derby.

As to the pineapples it caused to be sold, their number was not recorded. ●

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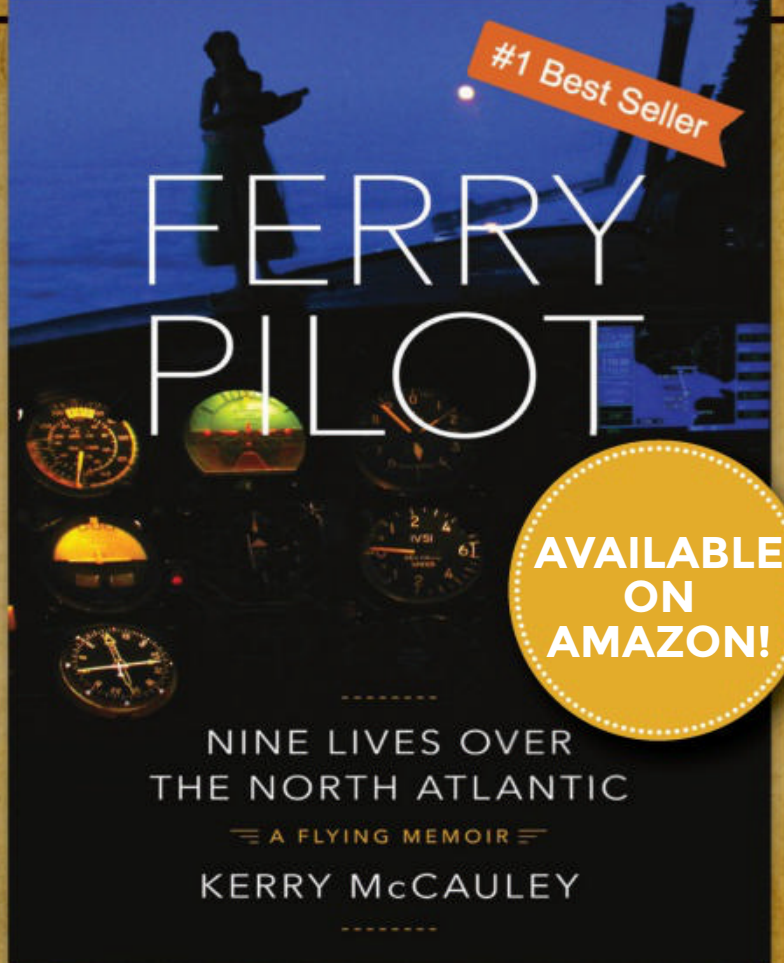


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1. Publication Title: Flying 2. (ISSN 0015-4806) 3. Filing date: 10/1/2021. 4. Issue frequency: Monthly except April/May, and June/July. 5. Number of issues published annually: 8. 6. The annual subscription price is \$15.00. 7. Complete mailing address of known office of publication: Bonnier Corporation 480 N. Orlando Avenue, Suite 236, Orange County Winter Park, FL 32789. 8. Complete mailing address of headquarters or general business office of publisher: Bonnier Corporation 480 N. Orlando Avenue, Suite 236, Orange County Winter Park, FL 32789. 9. Full names and complete mailing addresses of publisher, editor, and managing editor: Publisher: David Carr PO Box 8500 Winter Park, FL 32790. Editor: Shawn Bean PO Box 8500 Winter Park, FL 32790. Managing Editor: Jake Lamb PO Box 8500 Winter Park, FL 32790. 10. Owner: Bonnier Corporation PO Box 8500 Winter Park, FL 32790. 11. Known bondholders, mortgages, and other Securities: None. 12. Tax Status (for completion by nonprofit organizations authorized to mail at nonprofit rates): Has Not Changed during Preceding 12 Months. 13. Publication Title: Flying. 14. Issue date for circulation data below: September 21; 15a. Total number of Copies: 125,043 (September 21: 126,234). b. Paid Circulation. (1). Mailed Outside-County Paid Subscriptions Stated on PS Form 3541: 88,130 (September 21: 83,877). (3). Paid Distribution Outside the Mails Including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution Outside USPS: 1,800 (September 21: 1,800). c. Total Paid Distribution 89,930 (September 21: 85,677) d. Free or Nominal Rate Distribution. (1) Free or Nominal Rate Outside-County Copies Included on PS Form 3541: 23,684 (September 21: 27,466). (4) Free or Nominal Rate distribution Outside the Mail: 274 (September 21: 215). e. Total Free or Nominal Rate Distribution 23,959 (September 21: 27,681). f. Total distribution: 113,889 (September 21: 113,358). g. Copies not Distributed: 11,155 (September 21: 12,876). h. Total: 125,043 (September 21: 126,234). i. Percent paid: 78.96% (September 21: 75.58%). PS FORM 3526: a. Requested and Paid Electronic Copies: 28,869 (September 21: 29,000). b. total Requested and Paid Print copies & Paid Electronic copies: 118,799 (September 21: 114,677). c. Total Print Distribution & Paid Electronic copies: 142,758 (September 21: 142,358). d. Percent Paid and/or Requested Circulation: 83.22% (September 21: 80.56%). 17. Publication of statement of ownership for a Requester publication will be printed in the Dec 21 issue of the publication. 18. Signature and title of editor, publisher, business manager, or owner: Robin Michaels. I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanction and civil actions.

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